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EDITORIAL.

The Synthesis of Quinine.

As our readers will remember, several months ago Mr. Maumené notified the French Academy of Sciences that he had succeeded in preparing quinine artificially by help of a compound "NH_2," newly discovered and previously reported on by him. He, at the same time, submitted a sealed package, and asked for a short delay to permit him to make the necessary therapeutic experiments.

A suspicion slumbering in our mind at that time that the pretended discovery might turn out as some previous ones, has become quite strong lately for several reasons. In the first place, it can hardly require two months to ascertain the therapeutical identity of an artificial quinine with the natural alkaloid. In the second place, Mr. Maumené's previous publications do not show that he has been a special worker on the field of alkaloidal or general organic synthesis, although it cannot be denied that any one might accidentally stumble across it. And finally, Mr. Combes recently addressed a communication to the Academy of Science, in which he denies the existence of the compound "NH_2." In his original communication (*Compt. Rend.*, Feb. 27th, 1882), Mr. Mauméne announced that a new body, NH_2, is formed during the reaction of permanganate of potassium upon oxalate of ammonium. Mr. Combes says that the existence of a body NH_2 or rather N_2H_4 (*hydrazine*) is not improbable, in a theoretic point of view, since the ethyl- and phenol-derivatives of hydrazine are known. But on repeating Mr. Maumené's experiments there was nothing obtained but ammonia and carbonic acid. Mr. Combes' paper was read at the meeting of the Academy of Sciences of June 26th by Prof. Wurz. Since then (July 10th), Mr. Maumené has sent in a reply to Mr. Combes' paper, in which he reasserts the existence of the compound NH_2. This communication was not read publicly, but was referred to Prof. Wurz, who will, no doubt, present a decisive report.

Of course, if the pretended substance NH_2, upon which Mr. Maumené has based his synthesis of quinine, is shown to be fallacious, the sample of supposed artificial sulphate of quinine deposited by Mr. Maumené will also likely turn out to be some other compound—perhaps some salt of ammonia.

The Pharmacopœia.

THE new Pharmacopœia has at last been published, and by this time will have reached a large number of those who have subscribed for it. We shall not, for the present at least, undertake any critical review; the publisher's notice, which has appeared in our advertising pages, serving to indicate the general character of the work. Those who are interested in the subject of materia medica, will find among *Notes and Queries*, in this number, a synopsis of the articles added or omitted in this edition of the work, as well as an arrangement of the several articles now officinal, according to their Natural Orders. Over one hundred and seventy circulars were sent to members of the Committee by its Chairman during the course of the revision, some of them being very voluminous. Most of the proof-sheets have also been sent to every member of the Committee of Revision, and it has been largely owing to the care taken to secure as perfect typographic and verbal accuracy as is possible that the publication has been somewhat delayed.

The Illinois Pharmaceutical Association.

THE third annual meeting of this body, held at Chicago, on the 10th, 11th, and 12th of October, appears to have been very largely attended, and to have quite justified the hopes of its managers. The amount of scientific business transacted was not so great as might be desired, but questions affecting the relations of pharmacists to each other and to the public received much attention, and the meeting resulted in a better organization of the Association.

[Original Communication.]

On the Presence of Vanadium in the Slag of Puddling Furnaces.

BY EDO CLAASSEN.

It is a well-known fact that many American iron ores, particularly magnetite, contain small quantities of vanadium. By the refining process of the pig-iron made from such ores, in the puddling furnaces, a large amount, if not all, of the sulphur, the phosphorus, and the foreign metals which used to be present in the iron, enter the slag. As the analysis of such a slag in regard to the presence of vanadium seemed to me to be a matter of interest, I tried to prepare vanadic acid from slag taken from puddling furnaces, in which pig-iron, made from Lake Superior hematite, was treated with magnetite from Lake Champlain. I did it with good result, as the following lines will show. The finely pulverized slag was for this purpose melted with half its weight, each, of potassium carbonate and potassium nitrate in an iron crucible, kept in a red-hot state for about an hour and in general treated according to directions given by Woehler. The melted mass was extracted with hot water, the solution nearly neutralized under constant stirring with nitric acid, and after filtration evaporated to the point of crystallization. Most of the saltpeter was hereby separated from the liquid, which was now precipitated by a solution of acetate of lead. The precipitate, containing, besides other lead combinations, if vanadium was present in the slag, vanadate of lead, was boiled with hydrochloric acid and alcohol, the solution separated by means of a filter and evaporated to a thin syrup. After addition of an excess of caustic soda it was perfectly saturated with chlorine gas and to the same, now containing all vanadium as potassium vanadate, was added, after filtration and evaporation, a lump of ammonium chloride large enough not to be entirely dissolved. All vanadic acid was hereby separated as ammonium vanadate, which was washed at first with a saturated solution of ammonium chloride and then with alcohol. The ammonium vanadate left, when heated, the vanadic acid as a reddish-brown more or less melted mass, which was identified by blowpipe tests. Although the amount of vanadic acid obtained was small (four grains from five pounds of slag), the result of the operation, *i. e.*, the proof of the presence of vanadium in the slag, was nevertheless interesting.

Cleveland, Ohio, September, 1882.

[Original Communication.]

Odika.

BY H. W. BACHELER, M.D.

Among the many luxuriant and magnificent forest trees of equatorial West Africa, none can surpass, for general beauty and symmetry, that which is called by the natives the "Aba." When growing alone and undisturbed, its conical outline and dark-green foliage remind one very much of the white maples of the Northern United States, by a distant view, but, on a nearer approach, a dissimilarity is observed. Wherever, in ravines or near the banks of rivers, the soil is moist the most part of the year, there the Aba chooses to grow, and during the months of June and July, the falling fruits permeate the atmosphere with a delicious fragrance not similar to any other. This, in form, size, and general appearance, is very much like mango-apples, so that the natives call mangoes the "White-man's Aba;" but the wild Aba is not much eaten as a fruit, one or two being sufficient for the whole season. The kernel, or seed, is the important and useful part.

When the fallen fruit covers the ground, much as apples do in America, the natives go in canoes to gather it, and the number harvested will be in proportion to the industry of the women. The Aba plum is about the size of a goose's egg, of a flattened ovoid shape, and, when ripe, a beautiful golden color. It consists of three distinct parts: the rind, the pulp, and the seed. The pulp consists of a mass extensively interwoven with strong filaments, which apparently grow out of the seed, and are with great difficulty separated from it. The seed, reniform in shape, is bi-valved, and constitutes about two-thirds of the bulk of the entire plum, and the inner kernel two-thirds the bulk of the seed.

In consequence of its being such a high tree, and growing in such inconvenient places, I have been unable to procure a specimen of the flowers.

As soon as the fruit is brought to the village, all the inhabitants assemble with cutlasses, and engage in the work of opening the plums and removing the kernels. The former are thrown away as useless. The seeds are evenly spread on the top of a rack of small sticks, under which a fire is built, in the morning, and subjected to the smoke and heat for an entire day. Towards evening, the heat is greatly augmented, and, in a couple of hours, the process is completed. The kernels are now soft, and the oil oozing from them, and, while yet in this condition, they are thrown into an immense trough and thoroughly beaten and mashed with a pestle.

Baskets, with banana-leaves spread in the inside to prevent the escape of the product, are in readiness, and it is put into them, and pressed down. The next day, these baskets are suspended in the sun, and at night are brought into the houses to congeal. The process is now finished. The cakes are removed by inversion of the baskets, and "bush-rope" tied around them, by which the pieces are carried. As thus prepared, odika is highly esteemed by the natives as an article of food, being made into a kind of thick gravy, and eaten with boiled plantains.

While at an interior mission-station on the Ogowĕ River, I made some experiments in soap-making. With palm-oil I succeeded very well, using for an alkali the old-fashioned ley of ashes. But I was disappointed with the odika, though I learned some peculiar characteristics of it as a grease. By boiling the crude odika, I was unable, as I hoped, to separate the oleaginous from the extraneous matter, of which it contains a large proportion, but when the above-mentioned ley was used instead of water, the mass, instead of saponifying, merely separated; the grease, resembling very much in all particulars ordinary beef-tallow, rising to the top of the chaldron, while the refuse was precipitated.

After clarifying this fatty matter, it answers instead of oil of theobroma very nicely, and I have used it considerably in making ointments and suppositories with pleasing results.

Gaboon, W. Africa,
August, 1882.

Syrup of Senega.*

BY DANIEL HIRTH, PH.G.

Syrup of senega is one of the most troublesome syrups which the pharmacist has to deal with, owing to the separation of pectin compounds and its liability to crystallize and gelatinize.

I have therefore made syrup of senega by a number of different formulæ, and the following are the steps in the manipulation.

Sample No. 1. This was made according to the directions of the United States Pharmacopœia, which are as follows:

Take of senega, in moderately fine powder, *your* troy ounces; sugar, in coarse powder, *fifteen* troy ounces; diluted alcohol, *two* pints.

Moisten the senega with two fluid ounces of the diluted alcohol; then transfer it to a conical percolator, and gradually pour on it the remainder of the diluted alcohol. When the tincture has ceased to pass, evaporate it by means of a water-bath at a temperature not exceeding 160° F. to half a pint; then filter, and, having added the sugar,

* Abstract of a thesis presented to the Massachusetts College of Pharmacy, 1882.

dissolve it with the aid of a gentle heat, and strain the solution while hot.

By this process I obtained a semi-opaque syrup, which was, with difficulty, filtered, after being evaporated to half a pint before the addition of the sugar, and crystallized after standing for a short time.

Sample No. 2. The following samples were made by working with two troy ounces of the drug. Senega, in moderately fine powder, two troy ounces; sugar, in coarse powder, six troy ounces; precipitated phosphate of calcium, one drachm; diluted alcohol, one pint.

The senega was moistened with one fluid ounce of the diluted alcohol, then transferred to a conical percolator, and the remainder of the diluted alcohol gradually poured upon it. When the tincture had ceased to pass, it was triturated in a mortar with the precipitated phosphate of calcium, and then transferred to a filter. When the filtrate had passed, it was evaporated to four fluid ounces at a low temperature, and then the sugar was dissolved in the hot solution.

By this process a clear and transparent syrup was obtained which was filtered without difficulty, and did not crystallize after standing.

Sample No. 3. Senega, in moderately fine powder, two troy ounces; sugar, in coarse powder, seven troy ounces; distilled water, one pint; alcohol, four fluid ounces.

The senega was moistened with one fluid ounce of water, and allowed to stand for twelve hours; then packed tightly in a conical percolator, and then water was poured upon it until the infusion began to pass. The operation was then stopped for twelve hours, after which displacement was resumed and continued until one pint had passed. The percolate was evaporated carefully at a low temperature on a water-bath to one fluid ounce, and while still warm the alcohol was gradually stirred in. The mixture was transferred to a bottle and shaken occasionally for several hours, filtered, and evaporated to one fluid ounce. One fluid ounce of distilled water was then added, and the mixture evaporated again to one fluid ounce, after which sufficient distilled water was added to make the whole measure four fluid ounces. It was then filtered (and if not perfectly clear refiltered) until the liquid passed perfectly clear. The sugar was then added, and dissolved with a gentle heat.

By this process I obtained a handsome syrup which remained clear, and did not show any inclination to crystallize.

Sample No. 4. Senega, in moderately fine powder, two troy ounces; simple syrup, five troy ounces; alcohol, one pint.

The senega was moistened with one fluid ounce of alcohol, then transferred to a conical percolator, and the remainder of the alcohol gradually poured on. When one pint of tincture had been obtained the alcohol was evaporated off at a low temperature, and the soft extract remaining was dissolved in four fluid ounces of distilled water.

Two fluid ounces of ether was then added to remove the oil and resinous matter held in suspension. The ethereal solution was removed, and the remaining watery solution filtered through paper. After heating over a water-bath to remove all traces of ether, it was then refiltered, and the syrup added to the warm filtrate. By this process a clear and transparent syrup was obtained not liable to crystallize.

Sample No. 5. Solid extract of senega, five drachms and twenty grains; distilled water, four fluid ounces; Alcohol, two fluid ounces; rock candy, seven troy ounces.

I dissolved the extract in the distilled water, and then evaporated to two fluid ounces, then added the alcohol, and allowed to stand for twenty-four hours, shaking occasionally. I then filtered through paper, and evaporated off the alcohol on a water-bath, and then filtered again. I then dissolved in the filtrate the rock candy by a gentle heat.

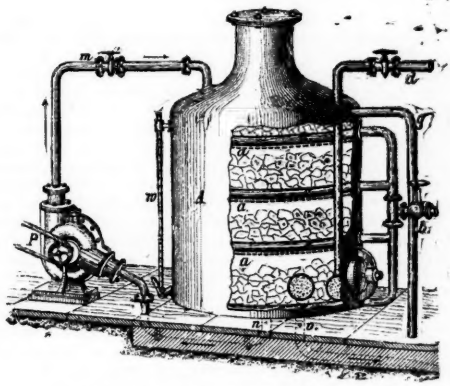
I obtained by this process a syrup which was perfectly clear when finished, but became more or less opaque upon standing.

Sample No. 6. This was made from the fluid extract, of which I made eight fluid ounces and obtained a product which was much lighter in color and of a much more characteristic odor and taste than any to be obtained in the market.

Fluid extract of senega, two fluid ounces; distilled water, three fluid ounces; sugar, in coarse powder, six troy ounces.

I evaporated the fluid extract of senega to one fluid ounce on a water-bath, then added the distilled water, and filtered. I then dissolved the sugar in the filtered liquid by the aid of a gentle heat.

The product was a clear syrup that would keep well.



Purification of Alcohol by Galvanism.

NAUDIN recommends the use of galvanism for the purpose of purifying alcohol.

A suitable vessel, *A*, is provided with a gauge, *w*, and with a series of perforated wooden diaphragms, *a*, *a*, *a*, upon which a layer of clippings of zinc are laid. Between these and the diaphragms are circular tubes, *e*, *e*, *e*, which are fed with hot water through *L*. At first, the apparatus is filled with a 5-per-cent solution of sulphate of copper, and the resulting solution of sulphate of zinc drawn off after some time. The copper is thereby deposited upon the pieces of zinc, each of which forms a galvanic element, capable of forming hydrated oxide of zinc in contact with alcohol and water, and generating hydrogen, which acts upon the impurities present. The latter are thereby either rendered odorless or tasteless, or may be more readily removed during the subsequent rectification. The alcohol to be purified enters through *d*, and is caused to traverse the apparatus several times by being pumped out below, at *n*, and re-introduced at *m*. Finally, when thoroughly "hydrogenized," it is drawn off through *v*, and allowed to flow into the rectifying apparatus. The liberated hydrogen, mixed with alcohol-vapor, is conducted through the tube *g* into a vessel containing ordinary spirit.

The duration of the treatment depends upon the condition of the spirit to be purified, and upon the temperature. —*Dingler's Polyt. Journ.*, vol. 245, 120.

Two Novel Uses for Pepsin.

DR. HOLLMANN (*Nederland Weekblatt*, 18, p. 272) has used an aqueous solution of sixteen grains of pepsin as an injection into the bladder of a patient who had hæmaturia, and in whom a catheter failed to empty the bladder. A few hours later, a dark, viscid, fœtid fluid readily escaped through the catheter.

Dr. Ed. Rosenthal has used an acidulated and concentrated solution of pepsin as a local, hourly application to diphtheritic exudations of grave character, and reports that it caused rapid solution of the membrane.

The solution was made with a drachm of Jensen's pepsin, twenty drops of chemically pure hydrochloric acid, and enough water to make a fluid ounce.

Professor Attfield on the Relations of Pharmacy to to the State.

In the course of the very admirable address, delivered by Prof. Attfield, as President of the British Pharmaceutical Conference, occur some very pertinent comments upon the collection, preparation, and distribution of drugs and medicines. We reproduce below that portion which will most interest readers in this country, feeling that it will help, somewhat, the solution of similar questions affecting American pharmacists.

Elaboration: Is a State best served, as regards pharmacy, by a large number of distributors of elaborated drugs, only a few persons being manufacturers of the preparations, or by probably a smaller number of distributors, each, however, making his own preparations? "A smaller number," because, in any calling, the greater the skill, knowledge, and intelligence of its followers, the greater their reasonable expectations of remuneration, and, therefore, the fewer that can be supported by the community. Now, in Great Britain, unquestionably the tendency—at all events during the past fifty years—has been for fewer and fewer of the distributors of drugs to manufacture their own medicinal preparations, the retailer relying for these more and more on wholesale manufacturers. Is this practice likely to promote the interests either of the public or of the pharmacist himself? In dealing with a druggist for drugs, simple or compound, the public expect to be served with what is trustworthy. The vendor is a "chemist" as well as a druggist; therefore, presumably he can chemically verify the trustworthiness of those of his drugs which have chemically definite characters. But he is a "druggist" as well as chemist: therefore, presumably he can guarantee the trustworthiness of his non-chemical drugs and drug compounds. How can he do this if he has not himself prepared those compounds? For they cannot be assayed chemically. Nay, if he has himself made them from the raw drugs, and thus by long acquaintance with the latter become thoroughly familiar with them, and a thorough judge of their character, how can he guarantee the quality even of what few drugs he may sell in the raw state? Further, if a druggist has not made his own preparations, and has not tested those he purchases, either because he himself cannot test them, or because they are beyond the grasp of chemical analysis, is he one whit the superior in pharmacy to his neighbor, the medical practitioner? Possibly both purchase their compounds of the same wholesale dealer. And if such a *soi-disant* druggist is not more of a druggist than the medical practitioner, where is the foundation for the hope that the medical practitioner will some day turn over all his medicine making to the pharmacist?

Again, if the druggist is only a distributor and not a compounder, or elaborator, or manufacturer of drugs, has he much more claim to be even a distributor than a grocer or any other trader who buys and distributes drugs? Is the State much better served by one of those distributors than by the other? Let there be no misunderstanding here. The cry of "drugs for the druggist" is a good and wise cry, but only when founded on the druggist's knowledge of drugs, and on his personal guarantee of their efficiency—a guarantee founded, as before stated, on his having either made or tested all, or practically all of his preparations. If he merely buys and sells his preparations, without such personal knowledge, he cuts his own professional platform from beneath his feet. Having taken up the ground of a mere trader, can he wonder if other more astute traders beat him on that ground? Neglecting what ought to be his own cherished art of elaborating or compounding his preparations, can he wonder if he has to relinquish that remuneration, those profits which were born of the times when the druggist was such a manufacturer, and which profits are still enjoyed by those who do so manufacture? Relinquish them he must if he deliberately labors on the lines of mere trade. In these days of overpopulation, and consequently keen competition, no other result can ensue. It is a case of reaping what is sown. And the sooner such a man realizes his position, and adds to his trade the trades of those who otherwise will supplant him, the sooner will he be saved from ruin. This differentiation between trading retail druggists and manufacturing retail druggists is already going on. Afterwards there will be another. Some day what remains of the trading retail druggist's trade in drugs will have flown away from him to the counter of the manufacturing retail druggist, even though the latter be charging higher prices; for, in proportion as purchasers find they cannot judge for themselves, they will go to those who can judge for them. Then, if the trader has cultivated other trades, he will have them to fall back upon. Fortunately, in the long run the fittest must survive; the fittest tradesman, who is only a tradesman, and the fittest pharmacist, who is a tradesman and a professional man too. Does the pharmaceutical apprentice of to-day desire future pharmaceutical success? Let him master the principles of his art. Let him practically learn how, by the aid of chemistry and botany, to test the quality of most of the articles he works with, and how to manufacture what cannot be tested.

Broadly, as a matter of self-interest and sound policy, the preparation of medicinal compounds by a few druggists only, and their mere distribution by the many, is a practice to be deprecated. Clearly, too, it is to the interest of the public that every druggist should be really, as well as nominally, a druggist—a man who either tests or manufactures every one of his own preparations. All efforts to secure future drug-dealing and drug-working to druggists must be founded on personal professional knowledge possessed by every pharmacist. A medical practitioner purchasing drugs at all, will surely prefer to obtain them from the neighboring druggist rather than from a distant source, if he knows that the druggist can give the guarantee of genuineness that he himself cannot provide, and if they can be obtained at a reasonable price. May he not in many cases go further, and give up dispensing bodily, if in the matter of trustworthiness of material the druggist can beat him, and if, of course, neither he nor his patient suffer too severely in pocket? For the practitioner will thus get that personal guarantee which should be the druggist's most treasured possession, a guarantee which must, in the nature of things, be stronger when afforded by a neighbor than when offered by the distant dealer, especially when in the latter case it is only afforded at second hand by a price list or a traveller. Contrast the value of the guarantee of a retailer, who is also a maker, with that of a druggist who can only trust to the respectability of a maker separated from him by two or three different agents and by scores or hundreds, if not thousands, of miles. Some preparations will doubtless always be better made by one man than by another, or by few persons rather than by many. Let us do nothing to dampen the ardor of discoverers, inventors, or originators, in great things or in small. And let us always welcome to our shores anything of excellence that may be offered to us by other countries. But if pharmacy has anything to do with the health and welfare of a State, and if that health and welfare are affected by the personal skill, knowledge, and ability of the pharmacist, let us avoid those false but specious principles, and those falser and more specious practices, which would sink pharmacists to the level of mere traders, mere dealers, mere agents, worthy and honorable enough in their sphere though such men might be.

In the matter, then, of the elaboration of drugs by all druggists, as against elaboration by a few druggists and distribution by the many, there is room for great improvement in English pharmacy; for it would be idle to deny that the preparation of his own compounds is the exception rather than the rule with the British pharmacist. No doubt druggists, who are manufacturers as well as retailers of the preparations on their shelves, may readily enough be found; but it is a fact that many druggists scarcely make even their own pills, but purchase them of wholesale makers (or even only of dealers) who reside, it may be, in quite another county, possibly in another country or in another continent altogether. What can such a druggist know of the quality of such articles? He urges the re-

spectability of their maker. But how much can he know of the characters of makers separated from him by an ocean? After a time prominent makers may be severely pressed by more obscure manufacturers, and he may be dealing with some of the latter, whose probity, with a sense of responsibility naturally diminished by distance, may have given way. In purchasing preparations cheaper, as such a druggist thinks, than he can make them himself, and, still sadder to say, perhaps better looking, is he not buying pottage with the coinage of birth-rights? Is he not dealing disastrously with his own interests, and with those of the State, in which he is after all but a steward?

Into the question of improvements in the elaboration of particular drugs, it is not desirable now to enter; first, because it is dealt with in the list of subjects for research annually issued by the British Pharmaceutical Conference; secondly, because the spirit of emulation will not permit it to pass out of sight; and, thirdly, because it would be unwise to dwarf the importance of the main question just considered.

Distribution.—Given a body of pharmacists, each member of which can, respecting his drugs and drug compounds, supply either the analytical or the synthetical guarantee of efficieny and trustworthiness, then a State is best served by drug distribution being limited, on the whole, to such a body. Limited as a rule. For just as some drug compounds will probably always best be prepared by the few and distributed by the many, so the distribution of drugs to dwellings remote from towns will probably always have to be accomplished by mere distributors. The main limitation of drug-supply to the public should, however, be to qualified druggists—men who prepare as well as distribute. The public in a sparsely populated district might purchase drugs of a mere distributor rather than do without them, especially if the real manufacturer were not far off, and whose personal guarantee were available at the cost of a long walk, or a drive, or a short railway journey—just as the services of a solicitor's confidential clerk, or of a medical practitioner's assistant, will be accepted in the absence of those of the principal. Bearing in mind, however, the importance in pharmacy of the influence of the personal guarantee, and that this influence becomes weaker and weaker the more it is stretched, the distribution of drugs should, obviously, in the interests of the public and of pharmacy itself, be confined, as a rule, to those who can afford such a personal guarantee—to those who, let me reiterate, either compound or test every drug they distribute. In the matter of pharmacy, a State will, year by year, be better and better served to the extent to which there obtains a pharmaceutical policy that provides for the growth, not of those already named as mere distributors of drugs, but of druggists who are manufacturers and distributors too.

The third-named agent of drug distribution, the medical practitioner, cannot be, and probably never desires to be, a competent pharmacist. He has never professed to be anything more than a distributor of drugs, and as year by year the demands upon his medical, surgical, and sanitary skill become, as they do, greater and greater, he will probably find his pecuniary interests, his tastes, and his aspirations for social position, prompting him to relinquish drug distribution altogether. Let pharmacists take care previously to prepare themselves for the work that will then fall into their hands; for whatever be the period when such a state of things comes to pass, it will be the outcome of a public demand for more and better work all round, from the pharmaceutical as well as from the medical practitioner; nay, the period of the demand will be greatly accelerated by the promise and power of the potential supply. Doubtless the country doctor will always carry, or hold himself ready to carry, in his pocket, his saddle-bag, or his carriage, agents which heal as well as agents which hurt, agents to inject into the flesh as well as those with which it may be incised, agents in the form of the soothing pill or the stimulating spirit. But for the compounding of even these he will look to the pharmacist proper, who, with due and dignified responsibility, will be near at hand to supply fresh and trustworthy fluids, convenient combinations, and palatable preparations, and who will receive adequate but not extravagant remuneration.

Respecting the distribution of drugs by retail venders others than competent and trustworthy druggists, it is open to very serious question whether a State does not get more harm than good by such a practice. Such vendors can offer no personal guarantee either of the purity or the efficiency of their drugs. The practice may perhaps be tolerated for a time in a country where the machinery for the supply of druggists, who are compounders as well as distributors, is incomplete. But in a State in which all the druggists are competent for their work, the supply of medicinal agents by vendors other than druggists should only be admitted in districts where population is below a given number per square mile, and then only in unbroken packets supplied by a not far-distant registered and responsible pharmacist. With non-pharmaceutical vendors of drugs must be classed co-operative stores. For personal responsibility respecting either raw or compounded drugs is scarcely compatible with the co-operative system. The companies who own co-operative stores do not make their own drug compounds. They are mere distributors. They could not well do or be anything else. At first sight it would appear that such an undesirable condition of things for the welfare of the public might be remedied by the employment at such stores of a staff of properly qualified pharmacists; men who could not only discriminate between good and bad raw drugs, but who could and would test all supplied drugs admitting of assay, and who could guarantee the quality of all other preparations because they had made them. There is, however, a good reason why such a remedy could not work, for then the cost of, and hence the prices charged for, dispensing prescriptions would necessarily be pretty much those of ordinary retail shops, and the inducement for the public to deal at stores rather than at shops would cease. Besides, long before such a remedy can be applied, society will probably find that money saved at co-operative stores, having to be expended in those rates and taxes, and in those many services now paid for by shop-keepers, there will be a balance of State advantages in leaving trade to the trader, and certainly in leaving the half-trade half-profession of pharmacy to the pharmacist.

Respecting the distribution of drugs in the form of proprietary preparations, especially those called patent medicines. The question here must be not so much what improvements can be effected in this mode of distributing drugs to the inhabitants of a country, as, can the inexorable demand for simple medicinal remedies by the public be supplied in any better form than that of patent medicines. For the demand for simple remedies by all persons for themselves, or for one another, are matters which always have lain outside, and always will lie outside, medical practice by professional men, a demand and a habit, the source of which lies deep down among the springs of human nature and of the common sense of free people. They therefore scarcely admit of criticism, and do not admit of carping cavilling objection. The demand and the habit exist naturally in this country, and must be dealt with wisely. They scarcely admit even of definition, or of the drawing of any line up to which they may go, and beyond which they may not go. This much would seem certain, however, that if a mother for a child, or a friend for a friend, may prescribe a remedy which has proved serviceable under similar circumstances, surely a druggist, who is daily dealing with remedies from year's end to year's end, may prescribe simple remedies too. If one druggist will not do so, we may be quite sure another will; and that to the extent to which druggists generally do not or cannot prescribe simple remedies, to that extent patent medicine owners will step in and supply the irrepressible demand. Some medical men decry the habit of prescribing by druggists; but is the demand for simple remedies by channels other than the medical man's prescription thereby curtailed? Probably not. On the other hand, do not such medical men, and those druggists who from vari-

ous motives follow the medical lead, thereby play directly into the hands of the proprietors of patent medicines? In the United States the practice of medicine is largely separated, and most wisely separated, from the practice of pharmacy. But, besides this, the open recommendation of simple remedies by druggists is discouraged. With what result? In no country is traffic in secret remedies more rife. It is, of course, wrong for the pharmacist to meddle with pathology, attempting to diagnose while knowing nothing about the human frame. I trust no one will construe what I have said into support of quackery. But whenever and wherever a druggist is free to sell a patent medicine, he should be free to sell and be able to sell a simple remedy prepared by himself, by the aid of that special pharmaceutical knowledge and skill which are the guarantee that he is something more than a mere drug distributor. The inability to recommend remedies characteristic of the mere seller of drugs, and the professional jealousy which would stop a qualified pharmacist from recommending them, have probably done more to foster the present enormous demand for secret remedies than all other causes put together. The reduction of what is sometimes termed as the patent medicine evil will probably be effected chiefly by that gradual extension of pharmaceutical knowledge amongst our future pharmacists, which will enable them to supply from their own shelves simple remedies for those tiresome minor maladies for which the public are now driven to patent medicines. The druggist who, in this country, prescribes simple remedies is a man who has been called into existence by the wants of the community—a useful servant, whom the public are too mindful of their interests ever too discharge. Society distinguishes clearly enough for all practical purposes between this man and the medical practitioner, and may well be left to seek the aid of one or other as required.

For improvement in drug distribution, therefore, we may reasonably look in two directions. First, in the distribution of drugs being limited, in the main, sooner or later, and of course without injuring any one, to druggists, such druggists being compounders as well as distributors of the drugs with which they deal. This will be brought about internallly by education, externally by legislation. Interternally, by the carrying out of that policy to which phurmacists may now be said to be committed, and which may be summed up in the words sound and thorough compulsory pharmaceutical education; externally, by appropriate legislative enactments. Improvement will result, secondly, in our having, in the place of secret remedies which are prescribed by persons at a distance who are irresponsible, the open recommendation of simple remedies by pharmacists who have made the components themselves, and who can guarantee their trustworthiness. This, too, will be brought about gradually by improved pharmaceutical education, and by that only. It would be unwise to provide for pharmacists any modified medical education. Let there be no pretense of professional medical treatment mixed up with pharmacy. Let the druggist's recommendation of simple remedies be founded on that knowledge and experience which comes of much pharmaceutical familiarity with remedies, and on that common sense and perception in all that pertains to drugs, with which a properly and specially educated pharmacist may be credited. Indeed, any trespassing on the purely medical domain would necessarily, sooner or later, involve commensurate punishment.

Chemists and Druggists.—An address on the relation of pharmacy to the State should include, at all events in Great Britain, some allusion to that part of the implied duty of a pharmacist to his country covered by his use of the designation or title of "chemist." The English pharmacist is a "chemist and druggist." From what has already been stated, it will be clear that the proper standard as regards such a "chemist," is that of a man who is not only a vender of chemical substances, but who has sufficient professional knowledge of chemistry to enable him to guarantee analytically every one of his drugs and chemical substances that admits of chemical assay. And there are large numbers of pharmacists in this country who can do all this and more. But does the average chemist and druggist of to-day come up to this standard? Is he even a general trading *chemist?* Is he not rather a man who has left to the oilman and the grocer the vending of "soda" and other alkalies, vinegar and other acids, delicate minerals and vegetable dyes and coloring matters, and hosts of such "chemicals," as they are termed; a man who, while calling himself and legally appropriating to himself the title of "chemist," has, through his ignorance of chemical substances, allowed chemists, who dare not call themselves chemists, to establish shops for the sale of photographic and other chemicals, and chemical and physical apparatus generally; a man who, through being unable to perform such simple chemical operations as the testing of a fluid excretion for albumen or sugar, has driven from his doors the physic-taking patient afflicted with diseases of the albuminoid or saccharoid type; and a man who has committed these sins of omission, not always because his time was wholly occupied with the pursuit of pure pharmacy. Can such chemists and druggists wonder that their calling is declining in this country, when even for chemical guarantees of the genuineness of their goods they must rely on the distant wholesale manufacturer, and for the pharmaceutical attractiveness of prettily coated pills, they find it necessary to go to the other side of the Atlantic? Will the rising generation of pharmacists allow this state of things to continue? No doubt a great deal of the work of the pharmacist of fifty or one hundred years ago has gone never to return, but a vast amount of new work has taken the place of the old. Chemistry is progressing with a rapidity unexampled in the annals of man's avocations. The trade in the materials and apparatus for the study and the practice of chemistry by amateurs, professional men, and manufacturers, is extending year by year. Will trading "chemists" allow this chemist's trade to slip through their hands? At no previous period in the history of this country has the subject of purity of food, drink, drugs, and all other things, occupied so much attention as at present. Never was there a greater demand on the part of the public, not for direct analysis at the request of ordinary purchasers, by officials under the Acts relating to adulteration —that Parliamentary scheme (Act of 1875, Section 12) has entirely failed—but for the personal guarantees of vendors that articles sold are what they are professed to be. Who so well able to give this guarantee as the "chemist and druggist" who is a chemist as well as a druggist? Such a chemist will extend his trade over the whole commercial area of chemistry, as well as draw to himself those pharmaceutical streams now flowing in channels uncontrolled by pharmacists. There is also minor professional work to be done by the "chemist" in such directions as those already indicated; work chiefly qualitative, and for which the chemist and, druggist would perhaps only receive silver fees, but for which he would be remunerated over and over again in the confidence reposed in him by his customers, and by the medical practitioners of the neighborhood, and in the prestige and status it would win for him.

Lemonade Iron.

THE effect of prescribing disagreeable medicines for some classes of patients, and especially the roving class which is often met with in the hospital practice, is well known. Sometimes an artifice in the shape of a *pleasant* medicine is useful in securing the return of a patient, whom it is desired to see again. The following formula for a "lemonade iron" prescribed in a case of this kind was recently mentioned in a clinical lecture by Professor Goodell, of Pennsylvania University:

℞ Tincturæ ferri chloridi ..... ʒ ij.
Acidi phosphorici diluti..... ..... ʒ vi.
Spiritus limonis..... ʒ ij.
Syrupi..... .....ad ℥ vi.
M. Sig. A dessertspoonful, in water, after meals.—*The Practitioner.*

Selections from the Non-officinal Formulary of the Dutch Society for the Advancement of Pharmacy.*

[Continued from page 273.]

Acetone.—A clear, colorless, mobile, perfectly volatile liquid, readily inflammable, burning with a luminous flame. Its odor is peculiar, recalling that of acetic ether; its taste is pungent, like that of peppermint. Spec. gr. 0.792–0.800 at 15° C. Boiling point 56° C.

It is miscible, in all proportions, with water, alcohol, ether, and chloroform. It should not impart moisture to chloride of calcium, and when shaken with water, should acquire not more than a faint opalescence, but no acid reaction. On the addition of iodine and diluted solution of potassa, no iodoform should be separated after standing.

Acetum Camphoratum. Camphorated Vinegar (Dorvault's).

	Parts.
Camphor, in powder	1
Diluted acetic acid	40

Mix them, let the mixture stand during three days, occasionally shaking; then filter, if necessary.

Acetum Rubi Idæi. Raspberry Vinegar.

	Parts.
Syrup of raspberries	2
Diluted acetic acid	1

Mix them.

Acetum Rutæ. Vinegar of Rue.

	Parts.
Oil of rue	1
Alcohol	15
Diluted acetic acid	300

Dissolve the oil in the alcohol, and add the diluted acetic acid.

Acidum Carbolicum Liquidum. Liquid Carbolic Acid.

	Parts.
Carbolic acid, crystallized	10
Alcohol	1

Melt the carbolic acid with a very gentle heat, and add the alcohol.

Acidum Trichloraceticum. Trichloracetic Acid.

Trichloracetic acid is obtained by the action of fuming nitric acid upon chloral hydrate, and subsequent distillation. It appears in rhomboëdric crystals, melting at 51° C., boiling at 195° C., and then entirely volatilizing. On exposure to air, they deliquesce; they are soluble, in all proportions, in water and alcohol. The aqueous solution, warmed with solution of potassa, yields potassium carbonate and chloroform.

The acid should not be rendered turbid by the addition of solution of nitrate of silver with a few drops of nitric acid.

Æther Terebinthinatus. Ether with Oil of Turpentine.

[Guttulæ lithontripticæ, *Durande.*]

	Parts.
Ether	4
Oil of turpentine	1

Mix them.

Apiol. Apiol.

Parsley seed, in coarse powder,	
Alcohol,	
Ether,	
Chloroform,	
Litharge	āā. a sufficient quantity.

Extract the parsley seed with alcohol until the latter ceases to be colored, and filter the liquid. Then mix it with animal charcoal, and evaporate it to the consistence of syrup. Shake the residue several times with a mixture of 2 parts of ether and 1 part of chloroform, and evaporate the solution until the odor of ether and chloroform has disappeared. For every 8 parts of the residue add 1 part of litharge, and let the mixture stand for two days. Then separate the supernatant liquid, mix it with a little animal charcoal, and filter it.

Apiol is a colorless, or yellow, oily liquid, having a sp. gr. of 1.07–1.08, a strong odor of parsley, a sharp, biting taste, and a faintly acid reaction.

It should be kept in a dark place.

Aqua Anthemidis. Chamomile Water.

[Aqua Chamomillæ Romanæ.]

	Parts.
Oil of Roman chamomile	1
Distilled water	2,500

Dissolve the oil in the water by agitation, and filter.

Aqua Chloroformi. Chloroform Wate

	Parts.
Chloroform	1
Distilled water	250

Shake them together frequently during one hour, let the liquid become clear by settling, and pour off the clear liquid.

Aqua Luciæ. Eau de Luce.

	Parts.
Medicinal soap	1
Alcohol	50
Rectified oil of amber	2
Water of ammonia	200

Dissolve the soap in the alcohol, and mix the solution, while shaking, with the water of ammonia and oil.

Aqua Melissæ. Balm Water.

	Parts.
Oil of balm	1
Distilled water	2,500

Dissolve the oil, by agitation, in the water, and filter.

Aqua Picis Concentrata. Concentrated Tar Water.

	Parts.
Tar	10
Carbonate of sodium	1
Warm distilled water	50

Shake the tar with the water, in which the carbonate of sodium had previous been dissolved, let the mixture stand during two or three days, occasionally shaking, then filter.

Aqua Sedativa (*Raspail*). Raspail's Sedative Water (Pain-killer).

	Parts. *No.* 1.	*No.* 2.	*No.* 3.
Water of ammonia	12	16	20
Spirit of camphor	1	1	1
Chloride of sodium	6	6	6
Distilled water	94	92	90

Mix the first two ingredients, then add the water, and dissolve the chloride of sodium in the liquid.

Aqua Sinapis. Mustard Water.

	Parts.
Oil of mustard (volatile)	1
Distilled water	5,000

Dissolve the oil, by agitation, in the water, and filter. This water should be made only when wanted for use.

Aqua Valerianæ. Valerian Water.

	Parts.
Oil of valerian	1
Distilled water	2,500

Dissolve the oil, by agitation, in the water, and filter.

Potassii Arsenias. Arseniate of Potassium.

	Parts.
Arsenious acid, in powder	1
Nitrate of potassium	1

Mix them and heat them in a Hessian crucible until no more vapors arise. Dissolve the saline mass, with the aid of heat, in distilled water, filter the solution, and evaporate it to the point of crystallization. Wash the crystals with distilled water, and dry them, between filtering

* See original title in our January number, page 10.

paper, at a temperature between 30° and 35° C. Throw away the mother-liquid.

The salt appears in the form of colorless prismatic crystals, readily soluble in water. This solution reddens blue litmus, and, when mixed with water of ammonia, and test solution of magnesium (magnesia mixture), it yields a white crystalline precipitate.

100 parts of arseniate of potassium contain 63.88 parts of arsenic acid, or 41.66 parts of metallic arsenic.

Balsamum Papillarum. Breast-Balsam.

	Parts.
Balsam of Peru	3
Acacia, powdered	5
Glycerin	30
Tannic acid	3
Water	35

Mix them.

Sodii Benzoas. Benzoate of Sodium.

	Parts.
Benzoic acid	4
Carbonate of sodium	q.s., about 5
Distilled water	q.s.

Dissolve the benzoic acid in 40 parts of boiling distilled water, and add the carbonate of sodium, previously dissolved in an equal weight [the original has "1 part," which is evidently an oversight] of boiling distilled water until the acid is exactly neutralized. Then filter and evaporate to dryness on the water-bath.

This salt is a white crystalline powder, soluble in an equal weight of cold water, in 20 parts of cold and in 8 parts of boiling alcohol. On exposure to air, it attracts moisture without, however, deliquescing.

A two-per-cent solution of the salt, mixed with 10 drops of a 0.2-per-cent solution of permanganate of potassium, should not become colorless within half an hour.

If the salt be ignited, the residue extracted with water and filtered, the filtrate acidulated with nitric acid, should not be rendered turbid by nitrate of silver.

Ferri Bromidum. Bromide of Iron.
(Ferrous Bromide.)

	Parts.
Iron, in powder	10
Distilled water	30
Bromine	20

Mix the iron with the distilled water in a glass flask, and add to it drop by drop the bromine. When the liquid has acquired a bright-green color, filter it, and evaporate it carefully to dryness in an iron capsule on the water-bath.

The above quantities yield 27 parts of ferrous bromide.

It is an amorphous mass, not completely soluble in water. It should not be prepared to be kept in stock.

Preparation of Hydrobromic Acid.

In addition to several processes described by us in previous issues of this journal, we give in the following a description of Topsoe's method,* in which amorphous phosphorus is used.

A flask of 500 *cc.* capacity is provided with a stopper, carrying a funnel-tube with stop-cock, and a gas-delivery tube bent at right angles, the outer leg of which is inserted into a Woulff's bottle containing about 50 *cc.* of water, so that the end of the tube merely touches the surface of the water. The flask having been charged with 100 *cc.* of water and 10 grams of amorphous phosphorus, the stopper is inserted, and the flask placed upon a tripod, best with an intervening sand-bath. The funnel-tube is charged, previous to its insertion into the flask, with 35 *cc.* of bromine, the stop-cock being, of course, closed. When the apparatus is completely put together, the stop-cock is opened *cautiously*, so that the bromine can run down *only in drops*. Each drop as it sinks and comes in contact with the amorphous phosphorus, produces a slight explosion, accompanied by an appearance of light or flame. Afterwards, when a sufficient quantity of hydrobromic acid has been formed and has been dissolved in the water, the latter dissolves the descending drops of bromine, and the action proceeds quietly. The flask should be shaken from time to time. During the process, the mixture becomes warm of its own accord, and only after all the bromine has been added, will it be necessary to complete the reaction by gently warming and shaking. Here it sometimes happens, in case the bromine has been allowed to drop too rapidly, towards the end, from the funnel-tube, that the phosphorus suddenly acts upon the total quantity of the free bromine present, and the liquid becomes colorless in a few seconds. When this happens, large volumes of gaseous hydrobromic acid are formed at once, which are, however, absorbed by the water in the receiver. This accident, which is not fraught with danger, though disagreeable, may be avoided by agitating the flask frequently, while the bromine is being added, and before applying heat. When the reaction is complete, the apparatus is allowed to cool. All the gaseous hydrobromic acid still contained in the flask is absorbed by the water. When cold, the liquids in the flask and in the receiver are poured together into a tubulated retort, fitted with a thermometer, and heat applied, whereupon the hydrobromic acid will be obtained as a colorless distillate, with constantly increasing specific gravity and percentage, until the boiling-point 125° to 126° C. (257° to 259° F.) has been reached. If the above-mentioned proportions are observed, hydrobromic acid of spec. grav. 1.47 (containing 48.17 per cent of HBr) may be obtained. If the distillation be continued still further, a more dilute acid will again pass over.

The concentrated acid fumes strongly on exposure to air, and may be preserved unaltered for some time.

This method may also be used for the preparation of hydrobromic acid on the large scale, by using larger vessels, but the same proportions of ingredients.

* Chem. Centralbl., 1870, 324.

Smith and Painter's Detachable Carboy Trunnion.

We have at several times published descriptions of apparatus intended to facilitate the emptying of carboys, and herewith present another illustration of the same nature. The appliance was shown by Smith and Painter, of Wilmington, Del., at the last meeting of the American Pharmaceutical Association, and consists of a framework support and two flanged trunnions, which have a screw-

point attached for affixing them to the sides of the carboy box.

The trunnions are said to have supported, in actual test, over one thousand pounds of weight. In attaching them to the carboy, it is only necessary to make a gimlet hole on two opposite sides of the box, an inch above the centre, when, with the aid of a wrench (provided with each set), the trunnions can be screwed in. The cost is $3 for the entire set, or $1 per pair for trunnions.

Preparation of Phosphoric Acid.

BY PROF. W. T. WENZELL.

[Continued from page 304.]

DURING the oxidation of phosphorus in the presence of moisture, a white vapor is always given off. This mist, or white cloud, was at one time supposed to consist of a mixture of the vapors from phosphorus and phosphorous acid. Schoenbein, the discoveeer of ozone, assumed that the vapor consisted of monatomic oxygen or antozone, as he called it. It was only of late that its true nature has been ascertained and demonstrated by the classical researches of Van Babo, and Nasse, and Engler, who furnished conclusive proof that the antozone of Schoenbein is nothing more than hydrogen peroxide in a state of vesicular suspension, a condition resembling a mist, only that it is more durable, and will continue to exist in this state for some time even after the vapor of water, with which it is associated, has been completely removed.

The following is the probable *rationale* of this process of oxidation, taken from the *Journal of the American Chemical Society*, Vol. III., p. 6, on the ozonization of air by moist phosphorus by Prof. Albert R. Leeds.

(1) $P_4 + O_{14} = P_2O_5 + P_2O_3 + 2O_2 + O + O$.
(2) $O_2 + O = O_3$.
(3) $H_2O + O = H_2O_2$.
(4) $N_2 + 2H_2O + O = NH_4NO_3$.

On viewing the above equations, it will be seen that by this method of oxidation ozone and hydrogen peroxide are important products; that they are formed, as it appears, simultaneously and independently of each other. Of this, there can be no question, since it has been shown that ozone is not capable of changing the water molecule into hydrogen peroxide. The only sufficiently assignable cause of the formation of these two substances can be found on theoretical grounds, in the quantivalence of the respective phosphorus and oxygen atoms. It necessitates the splitting, in order to supply the phosphorus atoms with the uneven number of oxygen atoms to form phosphoric and phosphorous oxides. It is hence easy to conceive that monatomic oxygen, or oxygen at the moment of its liberation from the ordinary oxygen molecule, would become active oxygen, and as such would be capable of oxidizing an oxygen molecule into hydrogen peroxide, and finally a nitrogen molecule in the presence of water to ammonium nitrate. The porous covering of our apparatus not only allows the gradual admission of atmospheric oxygen to the interior, but it also permits the dialyzation of ozone from hydrogen peroxide. The former is given off by diffusion through the porous septum into the atmosphere, while the latter is retained within, dissolved by the acid fluid, and either serves to oxidize a part of the phosphorous acid into phosphoric, or takes a part in the direct oxidation.

That hydrogen peroxide is absorbed and present in the acid solution is demonstrated by shaking together a portion of it with anhydrous ether, and a drop of a solution of chromic acid, when the ether will at once acquire a blue color from the perchromic acid formed.

That ozone is given off from the porous covering freely and abundantly may be shown by its peculiar odor and the color reaction upon a slightly moistened ozone test paper (Schoenbein's). As has been stated, the acid solution is composed of a variable mixture of phosphoric and phosphorous acids, but it generally contains also in addition a certain quantity of arsenic, which, in order to make a correctly pharmaceutical product, will necessitate its removal; and, further, the phosphorous acid should be converted into phosphoric acid. To effect the former, the acid solution is evaporated in a Berlin or Meissen dish until a thermometer placed in it will indicate a temperature of 160° F. At this temperature, the acid liquid will become turbid, and deposits the arsenic in the metallic state as a brownish-black substance; and if this heat is maintained a short time, all of the existing arsenic in the liquid will be completely precipitated, the supernatant fluid becoming clear and colorless.

That arsenic may separate from a heated phosphoric acid solution has been shown by E. A. Schreck in a paper on "Dilute Phosphoric Acid," published in the proceedings of the California Pharmaceutical Society for 1880.

He found a separation of arsenic to occur when the temperature was inadvertently allowed to go far above 400° F. (204° C.), a point at which the acid was found to act strongly on the dish. The removal of arsenic at 160° C. (302° F.) is complete, and it is not unimportant to consider that neither this temperature nor the concentration of the acid is sufficient to effect Berlin or Meissen ware materially. (The specific gravity of the acid at this degree of concentration is 1.75.) If, however, the heat be allowed to reach 170° C. and beyond it, the phosphorous acid will resolve itself into phosphoric acid and spontaneously inflammable hydrogen phosphide, which, as it is given off, will burn vividly, with a snapping noise:

$$4H_3PO_3 = 3H_3PO_4 + H_3P.$$

The arsenic probably exists in the acid liquid as arsenic acid, as it is well known that hydrogen peroxide is capable of oxidizing arsenious acid into arsenic. The reduction of arsenic acid to metallic arsenic may be formulated to the following equation:

$$5H_3PO_3 + 2H_3AsO_4 = 5H_3PO_4 + 3H_2O + As_2.$$

The acid solution is next to be diluted and filtered, preparatory to the oxidation of the phosphorous acid into phosphoric. The filtrate is evaporated until the thermometer indicates 120° to 130° C. At this temperature, the oxidation is easily effected by means of nitric acid, the usual nitrous vapors being given off. The amount of nitric acid (sp. gr. 1.38) required for the completion of an acid solution obtained from three hundred and sixty grains of phosphorus varies from two to five drachms. (To oxidize the same quantity of phosphorus requires, by the officinal process, five troy ounces of acid of sp. gr. 1.40.) By adding the nitric acid until nitrous vapors cease to be given off, an excess of the acid will unavoidably remain, and will require prolonged heating and a high temperature until it is all dissipated. In order to avoid this troublesome part of the process, a slight change was made in the mode of procedure by reserving a portion of the acid fluid for the purpose of getting rid of the excess of nitric acid, and thus dispense with the final heating. I have found that by reserving about one-tenth of the solution, an amount usually in excess of what is actually required, the desired end is easily accomplished. The oxidation is conducted in the usual way, the nitric acid being added in small portions at a time until the liquid acquires a yellowish tinge and the effervescence from the escape of nitrous vapor has almost ceased. The reserved portion is now to be added gradually, when in due time a point will be reached when the yellow color of the liquid is replaced by a bluish-green, which, gradually fading, ultimately becomes colorless. Should any of the reserved liquid be left, it may be added in small portions, each of which may also be oxidized by the cautious addition of a few drops of nitric acid. A valuable guide for determining the end reaction will also be found in noticing the gas-bubbles as they form and break on the surface; if they contain colored nitrous vapors, more of the reserved liquid should be added; and if, on the other hand, the bubbles are filled with a colorless gas (nitrous oxide), the oxidations may be assumed as practically completed. A minimum excess of phosphorous acid is rather desirable, as it insures the absence of nitric acid, and it will become in time converted into phosphoric acid by absorption of oxygen from the atmosphere.

The phosphorous acid may also be oxidized in a flask of

from eight to ten times the volume of the acid fluid. This method has the advantage that but a very small quantity of nitrous fumes will escape during the process, if the flask is sufficiently large, the nitric peroxide being utilized in the oxidation. This process will hence require a still smaller quantity of nitric acid. The operation is also accomplished with less annoyance to the operator on account of the small amount of nitrous fumes given off into the air from the flask. The reactions taking place within the flask may be formulated as follows:

(1) $2H_3PO_3 + 2HNO_3 = 2H_3PO_4 + H_2O + N_2O_2$.
(2) $N_2O_2 + O = N_2O_4$.
(3) $N_2O_4 + H_2O = HNO_3 + HNO_2$.
(4) $\left\{\begin{array}{l} 2HNO_3 + 2H_3PO_3 = 2H_3PO_4 + H_2O + N_2O_2. \\ 2HNO_2 + 2H_3PO_3 = 2H_3PO_4 + H_2O + N_2O. \end{array}\right.$

The liberated nitric oxide, a product of the first reaction, on coming in contact with atmospheric air which enters the open flask, is there converted into nitric peroxide, and, on being dissolved in the aqueous vapor filling the flask, gives rise to the production of nitric and nitrous acid, as shown in third reaction. These acid vapors, condensing on the cooler sides of the flask, flow back into the liquid, causing further oxidation, nitric oxide being again disengaged, as exemplified in the fourth reaction, the final product being nitrous oxide, which escapes. Unquestionably, nitric peroxide acts here in a nearly similar manner in promoting oxidation, as it does in the conversion of sulphurous oxide into sulphuric in the manufacture of sulphuric acid, nitrogen dioxide being simply a carrier of oxygen.

In using the flask process, care should be taken to adjust the amount of nitric acid present at a time to the size of the flask, or the amount of nitric fumes produced should not be formed in such quantity as to cause any considerable escape. Again, no further addition of nitric acid should be made until the nitric peroxide is first absorbed and the interior or the flask above the acid liquid rendered nearly colorless. The mode of conducting the final oxidation by means of a reserved portion may also be used here, and also the manner of ascertaining the end-reaction. Should, however, any doubt be entertained as to the absence of nitric acid, its presence is readily detected by moistening a fragment of crystallized ferrous sulphate with a little of the acid fluid by means of a glass rod, producing the well-known dark-brown coloration.

This method is, as a method, of course, somewhat tedious, particularly if the quantity of acid to be made is considerable. Its advantages can only be said to outweigh the trouble if the officinal quantity or its double is to be made, and no conveniences are to be had for carrying off the nitrous vapors.

San Francisco, September 1st, 1882.

Note on Convallaria Majalis.

BY A. LANGLEBERT.

Recent communications made to the Academy of Sciences and Academy of Medicine by Profs. Vulpian and Sée, have attracted the attention of the medical profession to a new remedy derived from the lily of the valley (Convallaria majalis). Without dilating upon the botanical characters of this beautiful little annual, belonging to the sub-order Asparageæ, I will briefly recapitulate its chemical composition.

The action of this medicament appears to be due to a glucoside and an alkaloid. Valz, in 1830, isolated from it two glucosides, "convallamarin" and "convallarin." In 1865, Stanislas Martin obtained an alkaloid, "maialine," an acid, "maialic acid," an essential oil, a yellow coloring matter, and wax. This plant, therefore, contains several principles that are themselves subject to modification. In fact, under the influence of dilute acids, convallaramin splits up into sugar and "convallamiretin," and convallarin into sugar and "convallaretin." The chemical composition being known, it was necessary to determine the seat of the active principles, it being easy to foresee that the effects would be different according to the parts of the plant employed. The experiments made hitherto have indicated that all the activity resides in convallamarin and maialine, convallarin appearing to be nearly inert. Already for a long time the *Convallaria majalis* has attracted the attention of the scientific world. Cazin tried the flowers under the form of an electuary, and obtained abundant stools; the root produced emeto-cathartic effects. Schultze prepared an alcoholic extract of the flowers, which was bitter and purgative with a dose of two grains.

Wouters, Peyrille, Cartheusen, and Klein made it out to be a purgative analogous to scammony and aloes.

I wish to emphasize this point, because one of the difficulties met with is the elimination, at least partially, of the purgative principle. The extract actually prepared is exempt from it.

In idiopathic epilepsy, headaches, and convulsions, Senckenberg, father and son, employed it in doses of from one to four grams. Hitherto it would appear the action on the heart was not even suspected. In 1880, some Russian physicians experimented with an infusion of the plant, but without sensible results. Recently the *Convallaria majalis* has been tried by Professor Sée in his clinical practice at the Hôtel Dieux, physiological researches being made simultaneously in the laboratory by Messrs. Bochefontaine and Hardy.

Alcoholates and tinctures of the entire plant and of the various parts were prepared, but the results upon the heart were not conclusive. Infusions, even in large doses (6 or 7 grams of the plant), were not uniformly successful. It became necessary, therefore, to prepare extracts of the entire plant and each of its parts, taking into account the action of the menstruum upon the active principles contained in the plant.

The aqueous, alcoholic, and hydro-alcoholic extracts prepared from the roots did not give the results sought for. In my opinion, the emeto-cathartic action, which was observed in a series of extracts prepared by me, was to be attributed to the presence of too large a proportion of the roots.

The aqueous, alcoholic, and hydro-alcoholic extracts of the leaves are three times less active than the extract actually prepared. Moreover, the aqueous and alcoholic extracts of the root and leaves, whilst fulfilling the therapeutic indications, possessed emetic and purgative properties if the dose given were too high.

The extracts prepared from the flowers and stalks gave good results, especially with animals, in which the cardiac phenomena observed were very remarkable; they were unaccompanied by emetic or purgative effects, but with very slight diuresis.

From the foregoing facts it would appear that each part of the plant employed produces a slightly varied effect. After several trials made with the flowers, stalks, leaves, and roots, the best results were obtained with an aqueous extract prepared from the flowers and stalks of the *Convallaria majalis*, with the addition of a third of their weight of roots and leaves.

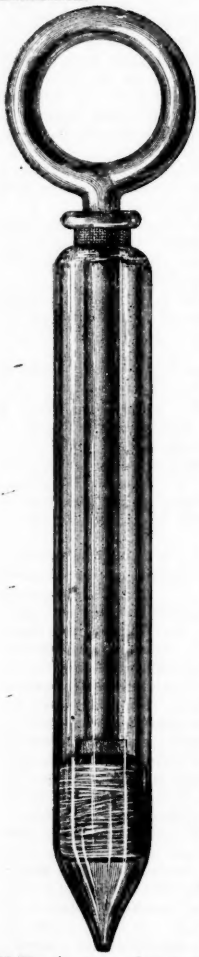
The extract, deprived in great part of the resinous purgative principle, is solid in consistence, shining black, possesses a very bitter taste, is soluble in all proportions in water and alcohol, and has an agreeable persistent odor. It is used in the preparation of an aromatized syrup, having a free bitterness without after-taste, and containing fifty centigrams (7½ grains) of extract to the tablespoonful. It is under this form, and in doses of two, three, or four spoonfuls, that the medicament is prescribed in the treatment of cardiac affections.—*Pharm. Journ. and Trans.*, Aug. 19th.

Preservation of Honey.—Honey, according to A. Vogel, contains on an average one per cent of formic acid. Observing that crude honey keeps better than that which has been clarified, E. Mylius has tried the addition of formic acid, and found that it prevents fermentation without impairing the flavor of the honey.

A New Glass Syringe.

BY P. J. MCELROY.

THE most important improvement made in glass syringes for the past twenty-five years was made by me recently, and shown to the trade for the first time at the Niagara Exhibition.



McElroy's new glass p. p. syringe.

It consists in the packing of the syringe. I use asbestos instead of cotton. It makes a perfectly tight joint, and will not shrink or swell as the cotton will. It will stand all the acids, and keep in the same position whether wet or dry.

By placing a finger on the point to prevent the air from entering, and drawing the piston up, it will fly back as well as in a hard rubber syringe packed with oiled leather.

I made them according to the directions, as regards the shape of the point, which you gave me at Saratoga. I have shown them to some of the best physicians in this section, and they pronounce them superior to anything they have seen for the purpose for which they are intended.

The Examining Committee of Druggists at Niagara agreed that they were entirely new, and they never expected to see glass syringes brought to such perfection.

Yours respectfully,
P. J. MCELROY.
CAMBRIDGE, MASS., Sept., 1882.

[This new syringe holds a little more than two drachms (140 minims); is provided with a ring-handle to admit the forefinger when in use, and has elastic rubber cushions to prevent the narrow orifice in the barrel through which the piston-rod passes being broken by too forcible use. The nozzle is shaped according to the most approved manner, and is free from any liability to injure the urethra when used by a careless person. In the sample which we have examined, the piston works smoothly and easily, and, owing to the elasticity of the packing, leaks but a trifle. To tests its tightness, a half-pound weight was attached to the handle, and the opening of the nozzle tightly closed with the thumb; on holding the barrel vertically, the piston slowly descended, during three minutes, to about the middle of the barrel, and at that point remained immovable.

Emblic Myrobolans as a Laxative.

THE Editor of the *British Medical Journal* calls attention to a remedy, well-known as an efficient laxative in in Eastern cauntries, viz., Emblic Myrobolans, received from Mr. Martindale, and recently imported from India. It is the fruit preserved in sugar of *Emblica officinalis*, or *Phyllanthus emblica*. It is an euphorbiaceous tree; and the fruit, which is about the size of an olive, or perhaps somewhat larger, contains a hard angular seed. Several species of myrobolans were formerly used in medicine; and an old writer says "they restore youth, improve the complexion, the breath, and the perspiration, and impart joy and hilarity." It is not alleged that this particular species possesses these properties; but Dutt, in his *Hindu Materia Medica*, says that it is "cooling, refrigerant, diuretic, and laxative. It promotes the appetite, and acts as a tonic." He has tried it carefully in several cases of habitual constipation, and has no doubt that it is a valuable addition to the list of laxatives. It must be remembered that it is a natural fruit, and not an artificial preparation. It may be eaten at dinner or dessert. It is most valuable for children.

Preparation of Nitroglycerin.

BOUTMY and FOUCHER have recently been awarded, by the French Academy of Sciences, the prize of two thousand five hundred francs for their new and safe method of the preparation of nitro-glycerin. The process consists in combining the glycerin with the sulphuric acid, so as to form the glycero-sulphuric acid, and decomposing the latter, slowly, by means of nitric acid. Two solutions are thus prepared: the glycero-sulphuric acid and the sulpho-nitric acid, the latter being formed by the mixture of equal parts of sulphuric and nitric acid. These mixtures give rise to the emission of a large amount of heat, which necessitates the employment of refrigerating mixtures. In finally mixing these acids in convenient proportions, a reaction is produced which continues about twenty minutes. The nitro-glycerin is deposited at the bottom of the vessel, and may be readily collected and washed. According to the old process, the reaction was rapidly accomplished, and a portion of the nitro-glycerin arose to the surface, which rendered the operation of washing difficult.—*Oil and Drug News.*

Iodoform in Phthisis.

AT a recent meeting of the Manchester Medical Society, Dr. Dreschfeld read a paper on the internal administration of iodoform in phthisis. Many pathologists having now for some time held the view that tuberculosis was an infectious disease, depending on the presence of micro-organisms (a view which had received strong support by Koch's important researches), and that tuberculosis, phthisis, and scrofulosis were closely allied, if not identical pathological processes, the author was led, guided by the excellent results obtained in the local treatment of scrofulous diseases, by iodoform, to try the administration of this drug in phthisis. This experience extended over more than six months; and the results so far obtained were satisfactory. The iodoform was given in the form of inhalation, and internally in the form of pills (one grain per dose), mixed with creasote and dextrin. The best results were obtained in cases of incipient and acute phthisis; in chronic cases, the results were less satisfactory; in a few cases of laryngeal phthisis, the local application of iodoform powder to the ulcerated surface of the larynx was followed by immediate relief, and clearing of the ulcers, without, however, producing healing of the ulcers. The conclusions arrived at were these. 1, Iodoform is well borne by the patient, without producing nausea or gastric irritation. 2. Owing to its anæsthetic properties, it relieves the irritation in the throat, and the cough, especially in incipient phthisis. 3. In some cases, it increased the digestive powers and appetite, and relieved the vomiting. 4. It reduces slightly the temperature in cases of phthisis with raised temperature. 5. In no case have any bad results followed the inhalation of iodoform. 6. Hæmoptysis forms no counter-indication for its administration (in some cases, hæmoptysis entirely disappeared on the administration of iodoform). 7. In incipient phthisis, iodoform seems to arrest the disease.—*Br. Med. Journ.*

Maryland State Pharmaceutical Association.—A meeting was lately held in Baltimore to make arrangements for the organization of a State Pharmaceutical Association. The second of May, 1883, is the time set for the preliminary meeting.

On the Manufacture of Sugar from Maize.

BY R. H. HARLAND, F.C.S.

THE development of this industry has of late years taken rapid strides, the manufactured article having come into use mainly, in this country, for brewing purposes. In America this class of sugar is largely in demand, and is used most extensively for mixing with cane sugar and cane syrups, whereby the sweetening power of the former is considerably reduced, but a sugar is produced of a much whiter and pleasanter appearance which commends itself to the consumer.

By far the larger portion of solid grape sugar imported into this country comes from America, but up to the present time its consumption has been restricted to the brewer, and more recently for confectionery and preserving purposes. The quantities imported during the last few years are as follows:

1879.....317,763 cwts.
1880.....405,760 "
1881.....399,648 "

This proves that its use is widely extending, and although the figures do not show such a marked increase as might perhaps have been expected, yet the imports of the present year will probably be far in excess of any previous quantity.

In the colonies this article is already attracting attention, and the time is, probably, not far distant when the districts suitable for the cultivation of maize and other starchy plants will be turned to account for the production of glucose and spirit. In England there are several manufactories turning out a considerable quantity of liquid glucose (and I may here mention that the term glucose, or grape sugar, is applied to both the liquid and solid article, although, as will presently be shown, they differ materially in composition), but up to the present, English manufacturers have been unable to produce an article equal to American, and this is, no doubt, due to the greater demand for the substance in America, which has caused a greater amount of attention to be directed to this industry.

In the manufacture of grape sugar a grain is selected which is rich in starch, and, for this reason, it is the starch which is converted into sugar, so that the larger the percentage of starch the greater is the yield of sugar, providing always that nothing is present in the grain which will cause loss of sugar or deterioration of the product during the operations incidental to its manufacture.

Starch is one of the most widely disseminated substances in the vegetable world. It is contained in the root, bulbs, leaves, bark, blossoms, fruit, and seeds of the most varied species of plants in various proportions, in some cases amounting to within ten to twenty per cent of the entire weight of the plant. Of course, the quantity of starch varies with the species of plant, the country in which it is grown, and also the mode of treatment during cultivation. The following table will give an idea of the proportion contained in various species of corn and grain:

	STARCH.	MOISTURE.	OIL.	ALBUMINOIDS.	GUM, SUGAR, ETC.	CELLULOSE.	ASH.	NITROGEN.
Wheat	63.30	14.50	1.90	14.40	..	4.20	1.70	..
Saigon rice	77.07	12.54	.64	7.86	1.00	.28	.61	(1.17)
European maize	76.48	12.35	1.58	8.05	..	1.08	.16	(1.28)
White American maize	71.41	11.85	4.19	7.00	..	4.16	1.36	(1.12)
Red American maize	74.91	12.05	2.09	5.69	..	4.00	1.26	(.91)
Potatoes	20.0	76.0	..	..	..	..	..	..

Starch belongs to that class of neutral bodies which are termed carbohydrates; its composition is expressed by the formula $C_6H_{10}O_5$ in common with dextrin, cellulose, and other allied bodies which, on being submitted to ultimate analysis, are shown to contain exactly the same number of equivalents of carbon, hydrogen, and oxygen, so that the formula $C_6H_{10}O_5$ represents the composition of the class of carbohydrates which includes substances differing materially in appearance and physical properties. Starch is insoluble in cold water, but on being heated with water to a temperature of 60° C. it gelatinizes, and if sufficiently strong is transformed into a jelly or stiff paste; the same result takes place at higher temperatures, the starch granules bursting and dissolving in water.

On heating starch to a temperature of 200° C., it is gradually transformed into soluble starch and dextrin.

On boiling with dilute acids—hydrochloric or sulphuric—dextrin and maltose are formed, which, by prolonged boiling are converted into dextrose. It is on this reaction that the manufacture of dextrose, or starch sugar, is founded. Represented by chemical equation, the action is:

Starch. Water. Maltose. Dextrin.
$3C_6H_{10}O_5 + OH_2 = C_{12}H_{22}O_{11} + C_6H_{10}O_5$.

After the lapse of some time, and continued heating, the dextrin is entirely converted into dextrose.

The part which the acid plays in this reaction is not thoroughly understood; it causes the starch, however, to combine with the necessary quantity of water for its conversion into sugar, remaining unacted upon itself.

Maltose, an isomer of cane sugar, is probably identical with the sugar produced by the action of malt extract on soluble starch, and is always present in properly prepared brewers' worts.

Starch may also be converted into sugar by the action of diastase, a peculiar substance contained in malt. This operation is carried on by the brewer in the preparation of malt worts, and the action of the diastase on the starch of the grain is, according to the researches of Payen and others, to first convert two-thirds into maltose, and the remaining one-third into dextrose, the maltose undergoing gradual transformation into dextrose, as the dextrose is converted into alcohol and carbonic acid by the action of the ferment.

Conversion of Starch into Sugar.—It is well known that by the action of acids on starch, substances are formed varying in character and composition with the time during which the action of the acid is allowed to take place in a boiling solution. In the preparation of glucose on a manufacturing scale, it is not unusual to employ pressure and an excess of acid over and above the quantity necessary for converting the starch, in order to accelerate the formation of dextrose; numerous patents have been taken out for machinery in order to either more rapidly effect the conversion or to subject the grain, after mixing with water, to a considerable temperature and pressure in closed vessels, previous to the treatment with acid; but in all cases the whole grain is treated, and the matters left undissolved by the acid are removed by filtration at a subsequent stage.

The quality of the article produced depends in great measure upon the quantity of acid used and the time allowed for the operation. To produce a white starch sugar, it is necessary to prolong the treatment until all the dextrin has disappeared, and the resulting solution of sugar is refined with animal charcoal previous to concentration. When a liquid glucose is required, the presence of the dextrin is necessary to preserve the substances in a liquid form, as otherwise partial solidification would result from the dextrose crystallizing out.

In America, where large quantities of grain are continually being converted into sugar, the best results, both as to quality and price, are obtained by first subjecting the grain—generally maize—to a process for the removal of the greater part of the oil and albuminoid materials. This is readily effected by first steeping in cold water for some hours, cracking it either in a disintegator or between mill stones, and delivering the broken-up maize with water into a centrifugal machine provided with a number of steel beaters revolving in a reverse direction to the machine. This effectually removes the greater part of the starch which is carried away suspended in the water and afterwards allowed to settle out on suitable starch tables. The germ, containing a large proportion of oil and albuminoids, together with the greater proportion of the outer skin or rind is

retained in the machine, while the portion which finds its way through with the starch can be readily removed during the process of settlement or by sieves. The starch thus produced is stirred with water to a milk, and run slowly into a vat containing boiling dilute sulphuric acid varying in strength from one to five per cent. The boiling is continued until the whole of the starch is converted into sugar: the time, of course, varies greatly with the strength of the acid and the quality of the sugar required to be made; but with open converters it is necessary to boil for from four to eight hours, using two per cent acid. It is essential to keep the concentration of the liquid as great as possible so long that the formation of sugar is not impeded, in order to avoid the cost of evaporation. The liquid is carefully neutralized, and the resulting precipitated calcium sulphate removed by filtering under pressure from a monte-jus or pump, through a filter press. When solid sugar or dextrose is being manufactured, the liquid will have a density of from 22° to 27° B., and contain from 4.5 to 5.5 pounds dextrose per gallon; it requires refining by means of animal charcoal exactly in a similar way to cane sugar, and afterwards concentrating in a vacuum pan.

In the treatment of the whole grain, a similar plan is adopted, preference being given to shortening the time of conversion by increasing the pressure on the surface of the boiling liquor to 90 lbs., or thereabouts, on the square inch, the liquor being neutralized with chalk, and the calcium sulphate, together with the undecomposed portions of the grain, removed by filtration. There are decided objections to be urged against this method, which do not apply with equal force when the American mode of manufacture, by first removing the impurities, is employed. The valuable nitrogenous portions of the grain are so admixed with calcium sulphate as to render what would otherwise be a valuable feeding material for cattle almost worthless, whereas, as is shown by the following analysis, the American residue contains all the feeding qualities of the grain in a fairly concentrated form.

	Residue from whole grain.	Residue from starch.
Moisture	9.00	10.86
Oil	10.00	6.09
Albuminoids	20.30	13.69
Uncrystallizable sugar	7.10	——
Starch, mucilage, etc	——	54.54
Mucilage, etc	18.50	——
Cellulose	6.80	14.04
Ash	28.30	.78
	100.00	100.00
Containing nitrogen	3.25%	2.19%

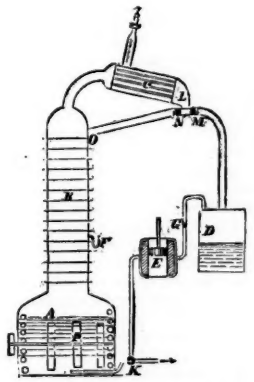
Further, it is well known that various organic combinations are formed by the action of the acid on the oily and non-starchy portions of the grain, which not unfrequently impart to the sugar an unpleasant taste and smell, requiring an increased quantity of animal charcoal to remove and absorb them; in fact, it is doubtful whether they are ever entirely removed, but probably small traces remain to the detriment of the finished article, and may be the cause of unsuccessful fermentations when used for brewing, and if required for the manufacture and distillation of alcohol, would produce a spirit inferior in flavor to that obtained from sugar prepared from nearly pure starch. It is, therefore, questionable whether the superior quality of the sugar and the higher value of the residue as cattle-food, does not more than compensate for the increased cost, about 13*sh.* per ton on the raw grain, in removing the albuminoid substances, and the loss of starch in the food, which would otherwise have probably been converted into sugar.—*The Analyst*, Sept.

Rectification of Alcohol under Diminished Pressure.

SEVERAL processes and apparatuses have lately been patented, for the rectification of alcohol at a diminished pressure, but they differ from each other only in less important details. We give, in the following, a brief description of an apparatus of this kind, patented by the "Compagnie Industrielle des Procédés Raoul Pictet," of Paris, accompanied by a sketch of the position of the different parts.

A sufficient quantity of the liquid to be distilled having been introduced in the boiler *A*, it is heated to a temperature of 30–40° C. (86°–104° F.) by a current of warm water or steam circulating in the coil. The pump *E* is next started, which exhausts the air contained in the apparatus and soon causes the liquid to boil. As soon as the pump begins to aspirate nothing but vapor of alcohol and water, its action may be interrupted by shutting off the cock-stop *G*, or else, its action may be allowed to continue and a communication be established, by means of the three-way stop-cock *K*, between the pump and the boiler *A*, so that the aspirated vapors are forced again through the liquid and increase the energy of the boiling.

As soon as the manometer *F* remains stationary, the condenser *C* is fed with cooling material, as, for instance, sulphurous anhydride, which may be conveyed directly into the tubes of the condenser. A special pump draws the anhydride through, after which it is recondensed to a liquid in a special apparatus not shown in the sketch, and from there it passes back to the condenser *C*, by its own pressure.



Rectifying Apparatus.

The vapors of alcohol and water condensed, under the influence of pressure and cold, in the apparatus *C*, descend to *L* and pass partly through the stop-cock *N*, back into the column *B*, and partly into the reservoir *D*, through the other stop-cock *M*.

By this arrangement the spirit becomes more and more rectified, and, after a while, the portion collecting in the reservoir will be found to contain ninety-six to ninety-seven per cent of absolute alcohol.

The distillation may be hastened by a rotary apparatus *P* inside of the boiler *A*.

Orange Wine.

A WRITER in the *Semi-tropic California* describes his experience in making orange wines from the wild orange of Florida years ago. He says that it cannot be surpassed for medical purposes, and sold when only eight months old for $3 per gallon. The oranges must be perfectly ripe. Peel them and cut them in halves, crosswise of the cells; squeeze into a tub. The press used must be so close that the seeds cannot pass into the must. Add two pounds of white sugar to each gallon of sour orange juice, or one pound to each gallon of the mixed sugar and juice. Close fermentation is necessary. The resultant wine is amber-colored, and tastes like dry hock with the orange aroma. Vinegar can be made from the refuse, and extract from the peels.

The Analysis of Wine.

BY J. NESSLER AND M. BARTH.

(Continued from page 310.)

II. A Modification of Neubauer's Test for Potato Sugar in Wine, and the Optical Behavior of Pure and Saccharated Wines.

Neubauer's method for the recognition of an addition of potato sugar to wine or must is based upon the optical behavior of the wine in a polarimeter. Whilst pure natural wine, which contains unfermented fruit sugar, rotates the plane of polarized light to the left, and completely fermented wine is quite neutral in its behavior, or rotates the plane only a few tenths of a degree of Wild's scale to the right, a fermented potato solution has a considerable residue of strongly dextrogyre constituents, which are not sugar. According to recent experiments by the authors with various kinds of commercial potato sugar, even the best qualities, pure white and in crystalline granules, contain from 15 to 18 per cent of unfermentable substance, each 1 per cent of which, in 200 *mm.* tubes, has a dextrogyre action of 1.5° (Wild). Consequently 1° of rotation by the fermented wine due to this cause would, on the average, correspond to an addition of 4 kilos of potato sugar to the hectolitre of wine. In the presence of unfermented sugar this result would be modified: 1 per cent of sugar rotates about 1.25° to the right, so that 1° of rotation, due to unfermented potato sugar, would correspond to about 800 grams of chemically pure grape sugar in the hectolitre. But inferior kinds of potato sugar contain from 26 to 30 per cent of the unfermentable substances, which do not reduce Fehling's solution.

As before mentioned, wine frequently contains a small quantity of a dextrin-like constituent, capable of exercising a slight dextrogyre action amounting to 0.03° to 0.6° (Wild). But this substance is almost completely insoluble in alcohol; whilst the greater portion of the dextrogyre residue from fermented potato sugar is soluble in 90° alcohol. Upon this fact Neubauer based a method of distinguishing between the slight dextrogyre action of a normal wine and that of one containing potato sugar. The method, however, has the defect of admitting the possibility of the result being affected by the presence in the test solution of free tartaric acid, which also has a dextrogyre action. It is, therefore, proposed by the authors to modify it as follows:—

210 *cc.* of wine, after the addition of a few drops of concentrated solution of potassium acetate, is evaporated to a thin syrup, treated with 90° alcohol, the alcoholic solution decanted when perfectly clear or filtered, water added, and the liquid decolorized with animal charcoal, evaporated to about 15 *cc.*, filtered, the filter washed and the filtrate brought up to 30 *cc.* (one-seventh of the original volume of the wine) and polarized. If the resulting liquid shows a rotation of more than 0.6° (Wild), the wine may be considered with certainty to contain potato sugar.

If a wine contain non-inverted and unfermented cane sugar, which would probably have been added to it after fermentation to increase the amount of extract, the dextrogyre action of such a wine would be changed into a levogyre action during the evaporation even by the influence of the natural acids, but more certainly if a few drops of hydrochloric acid be added. The presence of unfermented cane sugar would therefore be indicated when a wine first shows a dextrogyre action and then after evaporation with hydrochloric acid shows a corresponding levogyre action.

A 6.5 per cent solution of cane sugar, which rotated 8.4° to the right, was heated in a water-bath during three-quarters of an hour with some hydrochloric acid, brought to its original volume and polarized, when it showed a left-handed rotation of 2.2°. In order to test whether the inversion was quite completed, this solution was now kept in active ebullition for half an hour, evaporated water being restored as far as possible; it had then acquired, without any perceptible charring, a wine-yellow color, and having been brought to its original volume, showed a left-handed rotation of 1.7°. A sugar determination with Fehling's solution gave 5 per cent. of invert sugar. It follows that a 1 per cent aqueous solution of invert sugar rotates about 0.34° to the left (1 per cent cane-sugar solution rotates about 1.3° to the right); that the inversion of a tolerably large amount of sugar is completely effected in three-quarters of an hour on the water-bath; and that by longer heating to a little over a 100° C. (*i.e.*, to the boiling point of the sugar solution) a portion of the resulting invert sugar is again decomposed. When small quantities of cane sugar are present, the natural acids of the wine are sufficient to effect complete inversion during heating; but with larger quantities (1 per cent and upwards) it must be assisted by a little hydrochloric acid. As soon as cane sugar in wine has completely fermented its addition to the must can no longer be detected by optical means.

The question whether an addition of caramel to a wine exercises any influence upon its optical behavior has been answered in the negative by the authors' experiments, caramel proving to be optically inactive.

III. Chlorine Determination and the Amount of Chlorine in Wine.

It is known that in the estimation of wine by experts an essential value is placed, among other things, upon the amount of ash found in it, and that manipulations for increasing its bulk considerably lower the proportion of incombustible substances that it yields. In order to cover this poverty of ash constituents an addition is often made of such salts as will remain completely dissolved in the wine and hence not raise suspicions, and for this purpose an addition of common salt to a sophisticated wine is not very extraordinary. But it is more common to use water from a spring rich in residual matter, by which means the lowering of the ash constituents through dilution of the wine is much lessened. Such waters, however, are often very rich in chlorine compounds, and therefore the estimation of chlorine in wines is not unfrequently of especial interest. But isinglass occasionally, though not very often, contains some added salt, so that the presence of a sophistication cannot be assumed with certainty upon the single ground of the occurrence of a somewhat too large quantity of salt.

All wines that contain abnormal quantities of common salt are distinguished by the ash not burning white so easily as that of most other wines: it pertinaciously retains carbon, and upon using a very strong heat in incinerating it probably fuses and a large portion of the alkaline constituents is volatilized. If the incineration residue be left to cool, treated with water so as to separate the salt from the carbonaceous particles, and then heated carefully so as to avoid spirting (a characteristic of common salt), a pure white ash will probably be obtained, but it will not contain all the salt. Further, if the extract be simply carbonized and then treated with water, the residue from the evaporation of the liquor cannot be looked upon as containing all the sodium chloride as such; because the organic acids of the wine, immediately upon being heated, and before they are decomposed, expel a considerable quantity of hydrochloric acid and eventually form carbonates. Consequently a chlorine determination of ash produced as carefully as possible gives the amount of chlorine compounds in a wine too low.

In the estimation of chlorine in original wines those quantitative analytical methods which depend upon the use of potassium chromate as an indicator are not available, because the red-brown silver chromate is not insoluble in the free acids of wine. The previous neutralization of the wine results in the production of color during the reaction, which prevents the commencement of the end reaction from being distinguished with the necessary sharpness.

In using Volhard's method of determining chlorine, white wine must be first decolorized with animal charcoal free from chlorine compounds, as the yellow tannin-like substances of the wine will produce with the ferric salt used as an indicator an intensely dark green or black color, and even by this decolorization the production of color in the

wine upon the addition of ferric salts, silver solution and potassium sulphocyanide cannot be entirely avoided.

A slight modification of Volhard's method induces a sharp end reaction and gives exact results. 40 to 50 *cc.* of decolorized wine is acidulated with nitric acid and treated with excess of titrated silver solution, and titrated solution of potassium sulphocyanide added gradually, until a drop of the liquid allowed to fall into a drop of dilute solution of a ferric salt (iron alum) upon white porcelain shows a distinct red color. If the quantity of potassium sulphocyanide solution required be large, the experiment should be repeated, taking as small an excess of silver solution as possible. Twenty-five undoubtedly genuine wines from different districts (including five red wines) were examined for chlorine, and it was found that the normal amount of chlorine in wine does not exceed 0.005 per cent, whilst in most wines it is below 0.002 per cent. Five genuine "Markgräfler" wines, of the years 1822, '62, '68, '70 and '75, showed an amount of chlorine varying between 0.002 and 0.0025 per cent. Italian and similar wines, grown in the neighborhood of the sea-coast, frequently yield an easily fusible ash that does not burn perfectly white; but none have yet been observed in which the amount of chlorine exceeded 0.006 per cent. At Carlsruhe several wines have been examined in which the chlorine amounted to 0.03 per cent, representing 0.05 per cent of common salt, or 25 per cent of the entire ash.

IV. Detection of Free Tartaric Acid in Wine.

If 100 *cc.* of wine be evaporated to a thin syrup, and this, while kept stirred, be treated with strong alcohol until a fresh addition of spirit no longer causes precipitation, all the tartar will separate within two hours and the alcoholic solution will contain the free tartaric acid. The alcohol is evaporated, the residue taken up with water, the somewhat turbid liquid cleared by the addition of pure washed animal charcoal,* filtered, and the filtrate, which may amount in volume to one-tenth of the original wine, treated cold with 1.5 to 2 *cc.* of a twenty-per-cent solution of acetate of lime. A wine, which tested according to Berthelot and Fleurien's method is found to contain no free tartaric acid, does not show the slightest turbidity when treated in the above manner. Wines containing 0.05 per cent of free tartaric acid show after a short time a crystalline separation, and after half an hour a distinctly crystalline granular deposit on the sides and bottom of the containing vessel; in two hours the separation is considerable, after which it does not perceptibly increase. An amount equal to 0.01 per cent gave in two hours distinct crystals of tartrate of lime. The presence, however, of so small a quantity of free tartaric acid is of little consequence in judging a wine. Wines from unripe or partially unripe grapes contain free tartaric acid; but according to the results of experiments on wines from most diverse districts it never exceeds one-sixth of the non-volatile acids present.

V. Estimation of Citric Acid in Wine.

Citric acid is sometimes used as an addition to the acid in an excessively diluted wine, either in substance, or, if it be desired to give to the beverage at the same time body and the appearance of old wine, in the form of tamarinds, in which it is present in considerable quantity. The estimation of citric acid in wine has therefore considerable interest.

For the detection of citric acid the characteristic behavior of its lime salt can be used, it separating in a crystalline form upon prolonged boiling of the aqueous solution; but the citric acid must previously be separated as much as possible from other acids and the special extract constituents of the wine, since citrate of lime remains dissolved in the neutral saline solutions of most acids. After many unsuccessful experiments the following method was found to give useful results:

100 *cc.* of wine being evaporated to about 7 *cc.*, it is allowed to cool and then treated with eighty-per-cent alcohol; after standing about an hour the undissolved matter is removed by filtration, the alcohol evaporated off, water added to bring the residue up to 20 *cc.*, part of the acid neutralized with a thinnish milk of lime (red wines require here an addition of some washed animal charcoal), and then filtered. The filtrate, which must still be distinctly acid, is brought up to the original volume of the wine with water, and 0.5 to 1 *cc.* of a cold saturated solution of neutral acetate of lead added and very briskly agitated. The lead precipitate contains a portion of the malic acid (another portion remains dissolved as an acid salt in the dilute acid liquid), phosphoric acid, a trace of sulphuric acid, tartaric acid and citric acid. It is filtered off, washed with cold water, placed together with the filter in a closed retort containing water saturated with sulphuretted hydrogen and energetically shaken and thus decomposed. After standing some time, the perfectly colorless, clear liquid, which contains the above-mentioned acids, is filtered off, washed with water containing sulphuretted hydrogen, the sulphuretted hydrogen driven off by evaporation, and the liquid, amounting to about 15 *cc.*, made faintly alkaline with thin milk of lime, so as to separate phosphoric acid, then filtered, the filtrate acidulated with the smallest possible quantity of acetic acid, and by standing from half to one hour the tartaric acid present sufficiently removed as tartrate of lime. The liquid is then evaporated to dryness to separate free acetic acid, the residue taken up with hot water, and this concentrated until the separation of the crystalline citrate of lime. After being once separated it is no longer soluble in hot water; it is filtered off, washed hot, dried and weighed. The salt has the composition $(C_6H_5O_7)_2\,Ca_3+4H_2O$. In this way, in a case where 20 *mg.* of citric acid had been added to a wine a precipitate corresponding to 13 *mg.* of citric acid was obtained.

In a specimen of commercial tamarinds 13.5 per cent of citric acid was found.

Most of the natural wines tested were found to be free from citric acid. Some of them contained traces; as, for instance, a white Alsace wine of 1878 and a white Italian wine of 1880. But the amounts of citric acid in these wines only amounted to between 0.003 and 0.002 per cent.

* The charcoal must be boiled with hydrochloric acid and washed so that whilst moist it shall have a perfectly neutral reaction, and contain scarcely any salts, especially phosphate.

Discoloration of the Skin by topical Applications of Pyrogallic Acid.

BY C. HUPIER.

EVERY ONE knows that when pyrogallic acid ointment is applied to the skin, the epidermis becomes more or less discolored, according to the particular part of the body to which it was applied, the tint varying from black on the palms of the hands and soles of the feet, to light yellowish-brown on other parts of the body. The color, which is confined to the epidermis, as several cases where desquamation has taken place have conclusively shown, is caused by oxidation, the oxidizing agents, according to the author, being exceedingly numerous, the alkalies and the oxygen of the air playing the principal parts in the reaction.

The alkalies are to be sought for in the soap used to wash the patient's linen and person, more especially his hands. After having rubbed in the ointment, the patient generally has recourse to soap and water, in order to clean his hands, but he really increases the evil by oxidizing the pyrogallic acid absorbed by the pores of his palms. If he simply confined himself to washing his hands in warm water without soap and wiping them in a soft towel, the stain would be very much lighter. Another reason why the palms of the hands darken so considerably is the large number of sudatory glands that exist on these surfaces. Not only this, but the perspiration remaining alkaline until it is neutralized by the fatty acids secreted by the sebaceous follicles, it has an oxidizing action on the pyrogallic acid, there being no sebaceous follicles on the palms of the hands. Again, the epidermis being very thick on this part of the body, the color penetrates it to a greater depth. These last two remarks apply with equal force to the soles of the feet. Another reason why these parts become more strongly colored is that, pore for pore, a larger amount of perspiration is exuded.—*Rép. de Pharm.*

Semi-Annual Report on Commercial Drugs and Chemicals.

(From the "September" Handelsbericht of Gehe & Co., of Dresden.)

Aconitine.—A demand having lately arisen for a pure crystallized aconitine, this salt has been prepared by Gehe & Co., and turned out to be entirely different from what had previously been sold in Berlin drug-stores under this name. The latter was not crystalline, but amorphous, contained no nitric acid, and had only basic properties.

Adjowan Seeds.—The seeds of Carum Adjowan (East Indian thyme, or true Bishop's weed), are used in India as a favorite remedy in dyspepsia, diarrhœa, and cholera, and are much preferable to thymol in the treatment of children.

Adonis.—The herb of Adonis vernalis, which has only been in demand for Russia, appears to receive attention elsewhere, since the proximate principle adonidin has been discovered in it. The latter has properties analogous to digitalin. (See also page 342.)

Agar Agar—or Japanese gelatin (Gelatin Tjen Tjan) has become a staple article of export from Japan, and is preferred where an odorless gelatin is needed.

Albumen.—Egg-albumen has greatly fallen in price since a use has been found for the yolk of egg in preparing fine leather. It appears, in commerce, in a new form, namely, as a coarse powder, made by beating the white of egg to foam and then drying it. This is an excellent agent for clarifying wines, liquors, etc. For every dozen eggs which would have been used by the old method, one teaspoonful of the dried albumen is taken and dissolved in a small quantity of water by macerating and frequent shaking or stirring. After being added to the liquid, it clarifies the latter in three or four days.

The largest albumen factory is at Korotscha [Government Kursk, Russia] where 16,000,000 eggs are consumed annually for manufacturing purposes, yielding about 108,000 pounds of albumen.

Aloes.—As is quite natural, owing to the predilection of the continental pharmacists for cape aloes, Gehe & Co. lay the greatest emphasis on the commercial features of this sort. On this side of the Atlantic, cape aloes are not a favorite, except, perhaps, in the preparation of some nostrums or in veterinary practice. It is true, cape aloes are only about one-fourth of the price of socotrine; but the latter are believed to be more effective, and have a much more pleasant odor.

Atropine.—The use of this alkaloid is still on the increase, and the price has been slightly reduced. Gehe & Co. state that the substance, as prepared by them, is the natural mixture (*sic!*) of the pure crystallized alkaloids contained in belladonna; every possible care is taken to exclude the amorphous alkaloid, the effects of which are not desired by the physician.

Balsam of Copaiba.—The falsification of this balsam, though not unfrequent, is not carried on so systematically as that of

Balsam of Peru, the great advance in price having stimulated adulteration and substitution. After this balsam had reached a figure of seventeen shillings about April, and the stocks in Europe had been about cleared out, new supplies began to arrive which gradually reduced the market to thirteen shillings. Suddenly, however, about the middle of August, the London stocks of one hundred and twenty cases were found to be held by a former speculator, whereupon the price again advanced, It is quite likely that a further advance will take place. Nevertheless, offers of balsam at much lower figures are made from Hamburg and Bremen, which are naturally based on imitations. While balsam of copaiba or of tolu are said to be the chief bases used in Bremen, it appears that genuine balsam of Peru is used at Hamburg, and mixed with a solution of benzoin, which mixture still answers to the requirements of the German Pharmacopœia. Samples of this, which are held at only ten per cent below the real market price, were unusually viscid, and had a strong odor of benzoin. According to Prof. Flueckiger, ten drops of genuine balsam of Peru, when mixed with four decigrams of calcium hydrate, should yield a soft, kneadable mass, while imitations made with concentrated solution of benzoin yield a mass which soon hardens. This test showed the undoubted presence of benzoin in the Hamburg balsam. The specific gravity test does not appear to be always reliable; at least, Gehe & Co. were compelled to refuse lots which had a specific gravity of less than 1.136, while there was ample proof of their being genuine and unadulterated.

Benzoic Acid.—The toluol benzoic acid being now manufactured by a shorter and not more expensive process than formerly (when it was obtained as a by-product in the preparation of artificial indigo by Baeyer's process), it has fallen to such a low price that it has completely supplanted the urine benzoic acid in the manufacture of dye-stuffs. Whether there will ever again be a use, either in the arts or in medicine, for the acid made from urine, time will show.

Gehe & Co. mention, as a curiosity, that urine-benzoic acid, when dissolved in glacial acetic acid and again precipitated by water, not only loses its odor, but also strongly reduces a solution of permanganate of potassium, like the genuine acid from benzoin.

Bismuth.—The new bismuth mines discovered in the north-western district of New South Wales (in "New England") are said to be extremely rich. In addition to the oxide, sulphide, and bismuth-blende, the metal occurs native in pieces from one-half to fifty kilograms, and is stated to be of extraordinary purity. The extent of the mines is such that the present annual consumption (about seventy thousand kilos) could be easily supplied at a very small fraction of the present price.

Boracic Acid.—According to the United States Consul at Livorno, the daily production of the works belonging to the estate of Count Larderel amounts to about eleven tons.

Chamomile, "Roman."—Since the Belgian flowers are preferred by American and English buyers to the less conspicuous, but more solid Saxonian, the former play the principal *rôle*.

Chinoline has been in increased demand, and lower in price. The salicylate, which was difficult to prepare, and very prone to change color, is no longer asked for. The only serviceable salt is the tartrate, which, when white and perfectly crystallized, insures the absence of impurities.

Cinchona.—Referring to the statements in the April report (see NEW REM., 1882, p. 175), it appeared, during the first half of this year, as if the gigantic speculation in cinchona barks, at London, would be unsuccessful. Already in the first portion of the year, holders of bark were compelled to make concessions, in order to make sales, and, since manufacturers of quinine bought the necessary supplies only reluctantly, the price of the bark had lost, at the end of July, about thirty per cent of the excess over the December price. The stocks of bark in London had reached, in the beginning of July, the extraordinary amount of 65,773 colli (in addition to 11,000 colli at Paris; while, on the other hand, there was only a small amount in New York), and the demand was only moderate. Suddenly, however, at the end of July, there came a change. Knowing that the total consumption of quinine had risen from 70,000 kilos in 1877 to 120,000 kilos, and induced by the small profits which the late bark market had afforded to the manufacturer, a few of the largest makers of quinine and the importers of cuprea bark united in a combination, which resulted in large sales of bark, in London, at the beginning of August, in an advance of the price of quinine by ten per cent, and in numerous orders for quinine from the United States. The condition of the bark market, at this time, was about as follows: Among the 77,000 colli, which were held at London and Paris, there were at least 15,000 which were entirely unsuited for manufacturers' purposes. The combination of speculators held about 34,000 colli; hence there were about 28,000 colli available to supply the immediate consumption. But these 28,000 colli, which are derived from a new variety of the cuprea cinchona, the so-called Tolima bark, containing only 0.8 to 1.5% of quinine, represent a much lower amount of quinine (esti-

mated at 13,000 kilos) than previous stocks of cuprea bark. According to reliable information, the forests near Buccaramanga, which yielded the excellent cuprea bark (containing much quinine and but little cinchonidine) were exhausted, and the Tolima bark, of which not more than 20,000 colli are available, will soon be all collected. Since this latter bark costs. at the place of collection, $75 per 240 Spanish pounds (unpacked), which corresponds to 2 shillings per English pound *loco* London, or to 400 marks per kilo of quinine prepared from it, it will be seen that the owners of this bark in Colombia will have to stop shipment. These facts alone threaten a rapid decrease of the principal barks at present used by manufacturers; but, besides, the important, soft Colombian and New Granada barks have also become scarce, so that the shipments of Carthagena and Calisaya barks, though regular, cannot be expected to turn the tide. The East Indian and Ceylon barks have also arrived, during the past year, in smaller quantity, and it will require four or five years before the new and large plantations will be productive. But they are expected to be of very great importance, the yearly increase being very large, as may be seen from the following amounts of bark yielded 1879 to 1881:

1879, about 173,000 kilos.
1880, " 373,000 "
1881, " 1,200,000 "

The yield for 1882 is expected to be 2,000,000 kilos.

While it appears from the above that manufacturers will soon have to fall back upon the stocks held by the speculators, and that the stocks of cheap quinine from last year have been consumed, it is to be hoped that no further artificial inflation will affect the price of quinine and of bark. It appears pretty certain that, after the lapse of the next five years there will be no more deficiency of bark, although it will be much longer before manufacturers will be able to dispense entirely with Colombian barks.

Cinnamic Acid.—In spite of many puffs in the journals, this drug has found no favor with the profession.

Codeine.—During the last twenty years, the consumption of this alkaloid has increased about fifty-fold. As it exists in opium only in small quantities, it would not be surprising if the artificial alkaloid, prepared from morphine, were soon to find employment in its stead.

Condurango.—Mataperro-condurango (from Ecuador) has suddenly again come into favor, and the supplies are about exhausted. The new German Pharmacopœia having recognized this bark, it is hoped that new stocks will soon be available. Venezuelan condurango, really the stems of guaco (stipites guaco) has constantly been in limited demand, and appears to have as much therapeutic effect as the former.

Convallaria.—The flowers of Convallaria majalis (lily of the valley) have attracted considerable attention, and owing to fair offers to collectors, considerable quantities have been collected.

Convallarin and Convallaramine are the names of two active principles existing in convallaria, which have properties analogous to digitalin. Gehe & Co. will soon put them on the market.

Cumarine has fallen about ten per cent in price, and is largely consumed by perfumers and manufacturers of snuff. It is also used in pharmaceutical practice, to cover the odor of iodoform.

Extracts, Dry.—Gehe & Co. criticise the action of the German Pharmacopœia Commission in directing the use of powdered licorice root as a diluent in the preparation of dry extracts. They regret the abandonment of dextrin, and prophesy its restoration at the next revision.

Extract of Meat, Australian, is in better demand since the price has receded ten per cent.

Extract of Licorice.—Gehe & Co. prefer to deal only in the two Calabrian brands: "Barracco" and "Policoro." They have lately made a renewed analysis of the different brands offered in the market, and have found that *genuine* Barracco licorice contains more glycyrrhizin than any other, while Policoro is still ahead of the "Duc d'Atri" brand, which is otherwise in great favor.

Glycerin has slowly receded about twenty per cent. in value, probably owing to a decreased demand for nitroglycerin manufacture.

Heliotropin.—An artificial proximate principle analogous to cumarine, and having the odor of heliotrope, has come into use, in surgical practice, to cover the odor of carbolic acid, in carbolized dressings.

Hepatica Nobilis.—Large quanties of this herb have been demanded for the United States, which could only be supplied at high prices.

Iodine.—It appears that the reduction from 6 to 5*d.* per ounce, made by the allied producers of iodine on the 20th of March, had been aimed at the French and Norwegian factories, but was too feeble a dose for the Chilenian non-union producers, who continued shipping their product to the United States and sold it below the combination price. The coalition, therefore, had to make a new reduction to 4*d.* per ounce, on May 15th. This is the lowest figure ever reached and is not likely to recede any further. It is impossible to make any guess as to prices for the future.

Jaborandi.—The supply of the leaves was so abundant that purchasers could be found only at very low figures, and for small quantities, since the alkaloid pilocarpine is generally preferred in medical practice, at present. The percentage of alkaloid in the genuine pernambuco jaborandi is very varying, probably owing to the different seasons in which the leaves are collected.

Milk Sugar was offered, this year, in large quantities by the Swiss manufacturers; the price has, therefore, receded. At the same time the quality has been much improved.

Musk.—The summer usually brought about a decline in the price of this article, but this year forms an exception, since there has been a constant rise from the beginning of the year. The arrivals of new Tonquin musk from the interior of China are very scant. Cabardine musk is also scarce and dear. Under the circumstances, there may be a possibility that the musk obtainable from the American musk-rat (Fiber zibethicus) may come into use. This animal is caught on account of its skin, about three millions (at about twenty to sixty cents each) being annually obtained in Canada. The musk-like secretion is contained in a gland of the size of a small pear near the sexual organs. For the manufacturers of fine soaps, this American musk is said to be invaluable, since it is almost as good and goes as far as genuine musk; besides, its strong odor is rendered mild by the alkali in the soap. If used for perfuming soaps, some time is required to improve and develop the odor. After a block of soap, perfumed with rat-musk, has been allowed to lie for a few months, only a very fine connoisseur can recognize the difference in odor from genuine musk.

Naphthalin, crystallized, has come in more extended use as a destroyer of moths. It is very effective and cheap.

Narcotic Herbs.—The harvest of belladonna and hyoscyamus is unsatisfactory this season. The demand has been so great, that the collectors in Bohemia and Hungary have struck for considerably higher prices. Nor is stramonium very abundant; but conium and digitalis—particularly the latter—have been collected in large quantities. Aconite has yielded a fine crop in Tyrol, but only a short supply is expected from Switzerland.

Oil of Anise, distilled from Russian seed, has become lower than for many years. It does not pay to use other seed, either on account of the higher price (as that from Thuringia and Moravia), or on account of the poor quality (as that from Puglin and Chili).

Opium.—Last year's yield of opium in Asia Minor, as is well known, has been unprecedented, having been 12,000 couffes (against a previous annual average of 5,000 couffes). Concerning this year's yield, alarming reports about damage by frost arrived already in February, but no special weight was attributed to them. True reports as to the condition of the crop could be obtained only late in the season, not before August. Up to Augnst 18th, only 1,064 couffes had reached Smyrna, against 3,051 at the same date of 1881, and the total yield is now estimated at not more than 4,500

couffes. It is not unlikely that the price will acquire an upward tendency, if the consumption is active and the supply of Persian opium should be deficient. There is but little of the latter, at present, upon the London market, and manufacturers of morphine are mostly restricted to the use of Smyrna opium.

Peptone, Dry.—This preparation, which is distinguished by an agreeable taste and inviting appearance, has rapidly found favor. But the supply, prepared for the market, has been exhausted, and it will only be during next winter that new stocks, made from blood-fibrin, or from meat and egg-albumen, will be available. Gehe & Co. propose to prepare dry peptone, hereafter, on a large scale.

Physostigmine could be reduced ten per cent in price, owing to regular shipments of Calabar beans.

Quinine.—At present there is not much prospect of a lower price, since the influence of speculation has outstripped that of normal demand and supply.

The consumption of quinine is constantly on the increase. Of the 4,000,000 ounces consumed in 1881, about 1,600,000 ounces fall to the share of the United States, and only one-third of this quantity is imported from Europe, the other two-thirds being manufactured here. The American manufacturers have been constantly endeavoring to have the import duty re-imposed upon foreign quinine, and to have the crude material placed on the free list—their efforts having been successful only with regard to the latter point. From and after January, 1883, East Indian bark will be admitted duty free, the same as South American barks.

Resorcin has been in diminished use during the last few months. The quality of the article, as furnished by the manufacturer, is unexceptionable, both the crystalline and the sublimed being of dazzling whiteness and great purity.

Resorcin has been in some demand in form of *cones* for cauterizing purposes. They may easily be prepared, but at much detriment to the color, although fused in porcelain crucibles and cast in gilt moulds. The cones or sticks have a yellowish-red color.

Salicylic Acid.—The manufacturers working under Kolbe's patent have, so far, refused to adapt prices to the reduction in the value of carbolic acid. Only the South-German opposition factory, which works outside of the patent, although with a capacity limited to the *status quo usque*,* offers their product at lower figures.

Sodium Benzoate has maintained its favor with the profession, and its consumption is largely on the increase, since it has been found that it is possessed of remedial powers in many pathological processes, analogous to its congener, the salicylate. The salt prepared from the artificial acid (from toluol-benzoic acid) was frequently preferred.

Vanadium Chloride has again declined, and permits enlarged consumption for dyeing purposes, and in the manufacture of inks.

Volumetric Solutions.—Gehe & Co. announce that, with the appearance of the new German Pharmocopœia, they will put upon the market carefully prepared volumetric solutions, made in accordance with the standards laid down in the work.

[It is to be presumed that the same will be done by American manufacturers of chemicals, or wholesale houses, in view of the introduction of volumetric processes in the new United States Pharmacopœia.]

Note on Methyl Orange as an Indicator of Free Acid.†

BY B. S. PROCTOR.

DR. LUNGE, in an article in the *Chemical News*, Dec. 16th, 1881, advocates the use of methyl orange (sulphobenzene-azo-dimethylamine) as an indicator in alkalimetry. I have found it useful also as an indicator of the presence or absence in free acids in salts, which, in their normal condition, have an acid reaction with litmus.

One grain of the dye in a pound of water makes an orange-yellow test-liquor, two or three drops of which added to one ounce of water give it a yellow tint, which is changed to pink by a very small trace of free mineral acid. It is not so sensitive to oxalic acid, still less so to acetic, and not at all affected by carbonic.

Ferrous sulphate.—The yellow liquor is not colored pink by a solution of pure ferrous sulphate, though the change is at once affected by a trace of free sulphuric acid in the presence of the sulphate.

With perchloride of iron, the indications are not so satisfactory; the color is deepened, but the reaction is not clearly marked when neutrality is disturbed by additions of hydrochloric acid or ammonia.

Alum.—Pure or commercial alums do not change the color of the orange, though they strongly affect litmus. A trace of free sulphuric acid added in the presence of the alum, at once changes the orange to pink. Ammmonia being added to this pink liquor, promptly renders it yellow and turbid; dilute sulphuric acid being then added drop by drop, with an interval and constant stirring, each drop produced an instantaneous tint of pink, which gradually changed back to yellow, as the acid was neutralized by the alumina in suspension. When the successive additions of acid had dissolved nearly all the alumina, the restoration of the yellow color became very slow, finally the pink color appeared permanent before the last traces of the alumina had dissolved.

Sulphate of zinc.—One ounce of water, one grain of sulphate of zinc, four drops of test-liquor remained faint-yellow, and changed to pink on the addition of one-fourth of a drop of dilute sulphuric acid. On adding ammonia and acid, the reactions were similar to those obtained with alum.

Repeating the test with sulphate of zinc to ascertain its delicacy, one ounce of water with one drachm of sulphate of zinc and four drops of the test-liquor remained faint-yellow, but changed at once on the addition of 0.08 of dilute sulphuric acid.

Organic acids.—The action of organic acids, though not so sharp as that of the mineral acids, is as clear as with most of the indicators in use.

With one ounce of water and five drops of test-liquor, a small fraction of a grain of tartaric or citric acid sufficed to develop the pink color. One drop of B. P. acetic acid produced the change, but one drop of vinegar-strength did not produce a pink color, though there was a change in that direction. In the liquor thus tinted by acetic acid, $\frac{1}{170}$ of a grain of sulphuric acid at once developed the pure pink color.

Bicarbonate of lime.—Water tinted pink in this way is very sensitive to ordinary hard water, and might probably give a fair approximation to the degree of temporary hardness in a water free from alkalies.

Chloride of lime produces no change of color. Corrosive sublimate causes a tinting towards pink, which is removed by the addition of chloride of ammonium.

Boracic acid causes no change.

Cream of tartar gives a tinting towards pink, which is not much altered by small additions of caustic potass, or by tartaric acid, nor even by small additions of hydrochloric acid, until the addition probably left some free hydrochloric acid in the solution.

Hydrocyanic acid produces no change even when present in nearly full pharmacopœia percentage, but the addition of a fraction of a drop of dilute hydrochloric acid developed the pink color in a solution containing more than a drachm of the B. P. hydrocyanic acid.

Arsenious acid has no action on the color, even on boiling for some minutes with the reagent.

Sulphurous acid in small quantity produces the red coloration, and does not bleach it when added in large excess.

Superphosphate of lime does not cause reddening, unless there is more phosphoric acid present than is requisite for retaining the lime in solution.

* We have been informed that during the pending suit no enlargement of the works can take place.

† Paper read at last meeting of the British Pharm. Conference.

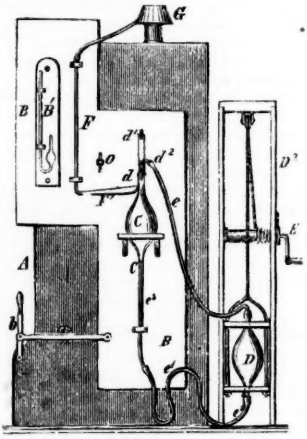
Improvements of Geissler's Vacuum-Pump.

MESSRS. HENRY GOEBEL and JOHN W. KULENKAMP, of New York, have patented an improved form of Geissler's vacuum-pump.

Upon the vertical stand *A*, a board *B* is fastened in such a manner that it may be moved about the pin *O* by means of the lever *b*, and thereby be brought into an inclined position, the object of the movement being, as will be seen further on, to alter the level of the tube *F'*.

The reservoir *C*, of the vacuum-pump, is provided, at its upper end, with a valve *d*, to which a short open tube, *d'*, is attached. The latter has, between the valves and the upper end, a short lateral branch which is connected, by means of rubber-tubing, with the upper end of the movable vessel *D*. The latter is, besides, connected with the lower end of *C'* by means of the tube *e'*.

From the neck of the reservoir *C* proceeds a tube *F*, which is connected with the vessel to be evacuated. The horizontal portion of this tube, namely *F'*, has the form of a trough, and forms nearly a right angle with the perpendicular branch of the tube.



Improved Vacuum Apparatus.

On filling *C* with mercury, a portion of the latter pours into the trough-like branch of the tube, and closes the outlet of the descending portion *F*. Hence, when it is necessary to refill the reservoir *C* with mercury, no air will be able to enter the reservoir through *F*.

The reservoir is filled by hoisting or winding up the vessel *D* until the mercury passes through the valve *d*, whereupon the excess flows through the tube *e*, back to *D* as soon as the latter is lowered. The board is now inclined by means of the lever *b*. This causes the mercury to flow away from the bend of the tube *F*, and to collect in the trough, thereby establishing a direct connection between the vessel to be exhausted and the reservoir of mercury. Before the latter is refilled, the board must be returned to its perpendicular position.

Separation and Estimation of Glycerin in Fats.

J. DAVID recommends the following process: Saponify the fat by melting one hundred *gm.* of it with a sufficient quantity of hydrate of baryta, constantly stirring until the greater portion of the water of crystallization has been driven from the excess of the hydrate. Then remove the heat; add eighty *cc.* of fifteen per cent alcohol, and stir until the mass has become firm. Separate the glycerin from the barium soap by boiling it with one liter of water, precipitate the excess of barium from the aqueous solution by means of a sulphuric acid, evaporate the filtrate, and determine the amount of glycerin from the volume and specific gravity of the evaporated liquid.—*Compt. rend.* 94, 1,477.

A Bismuth Hair-Dye.

BY A. NACQUET.

THE author states that he was induced by a knowledge of the injurious properties of the many hair-dyes that are put forward as perfectly harmless to make the attempt to produce one that should be fairly entitled to that description. Whilst working upon the subject he protected the different steps by patents, in order to secure priority, but having attained what he considers to be a satisfactory result, he has now abandoned his rights for the public benefit.

M. Naquet's experiments were made in the direction of compounding a metallic tincture that should have an innocuous metal for a basis instead of lead, and for this purpose he selected bismuth. The preparation which was the subject of his first patent consisted of two solutions that were mixed immediately before being used, and he describes the method of making it as follows.

It has long been known that a solution of bismuth is obtained in treating bismuthic hydrate with a solution of bitartrate of sodium; but it is not very easy to prepare, and not more than a very small proportion of the bismuthic hydrate employed is ever dissolved. M. Nacquet therefore sought an easy method of preparing the double tartrate of potassium (or sodium) and bismuthyl ($C_4H_4NaBiOO_6$). The bismuth is dissolved in the smallest possible quantity of nitric acid, and to this is added an aqueous solution of tartaric acid (three parts of acid to five of bismuth) and a large quantity of water; the whole is then thrown on a filter and the precipitate washed. The wash water contains some bismuth, which can be removed by precipitating with a sulphide, then redissolved in nitric acid and used in a subsequent operation. The well-washed precipitate, whilst still moist, is dissolved in a boiling solution of sodic bitartrate (twelve to fifteen parts of bitartrate to five of bismuth), then filtered, diluted with water, alcohol and glycerin, and again filtered. Each liter should contain 150 *cc.* of glycerin, 150 *cc.* of alcohol, and 600 *cc.* of water. The proportion of bismuth present should be two grams of metal per 1,000, and if the liquor contains more or less it should be brought to that strength. The paper through which this liquid is filtered will retain some bismuth, precipitated by the alcohol; this can be redissolved in nitric acid and again used. The bismuthic solution alone does not dye, but mixed with sodium hyposulphite it soon deposits sulphide of bismuth which dyes the beard and hair. But as this mixture is quickly decomposed it must not be made until just as it is going to be used. This form of bismuthic hair-dye, therefore, requires to be sent out in two bottles, one containing the bismuthic solution, the other the solution of sodium hyposulphite (one part of solution saturated in the cold diluted with five parts of water). When required for use these are mixed together in equal proportions.

The bismuthic product precipitated by tartaric acid and water can be dissolved by means of carbonate of potassium or by any of the caustic or carbonated alkalies, including ammonia, the liquid being afterwards neutralized by a current of carbonic acid gas and filtered. But, unfortunately, this neutral product, or even one slightly alkaline, does not act as a dye when mixed with either hyposulphite of sodium or flowers of sulphur. It can only be used by moistening the hair first with the bismuthic liquid, and then after it has dried, with a solution of sulphydric acid or a sulphide.

This dye is said to have a progressive action, and to produce all the shades from a light flaxen to a deep chestnut color, according to the number of applications made.

The second patent was taken out for a preparation that could be sent out in one bottle, M. Nacquet, while pursuing his investigation, having found that an ammoniacal solution of the tartrobismuthic product will keep indefinitely when mixed with solution of hyposulphite of sodium, if the containing bottle be kept well closed. Such a mixture is said to make an admirable hair-dye, it decomposing and depositing sulphide of bismuth in proportion as it loses ammonia and is acted upon by carbonic acid in the atmo-

sphere. The degree of concentration of the liquid is not of great importance, nor the quantity of ammonia. The following is the working formula given by M. Nacquet:

Dissolve 100 parts of bismuth in the smallest possible quantity of ordinary nitric acid (about 280 parts). To this liquor add a solution of 75 parts of tartaric acid in water and then a rather considerable quantity of water to insure complete precipitation. The whole is then thrown upon a filter and the residue washed with water until the washings are no longer acid. The magma left on the filter is then put into a dish and solution of ammonia gradually stirred in until all is dissolved. The magma derived from one and a half kilograms of bismuth will require 0.8 or 0.9 liters of ammonia. To this liquid are added seventy-five parts of hyposulphite of sodium in powder, and when the salt is dissolved, the product is filtered and put into bottles. In this state it is ready for sending into commerce, but it is of advantage to add one or two per cent of glycerin; no addition of alcohol is necessary; the liquid so prepared would contain about five per cent of bismuth. It may be further diluted with water if desired. The hair or beard when saturated with this liquid acquires, after five or six hours, a deep chestnut color. Upon washing the hair this color disappears, giving place to a delicate flaxen color. By repeating the operation daily, a stage is arrived at when, after passing through all the intermediate shades, the deep chestnut color remains persistent.—*Moniteur Scientifique* and *Pharm. Journ.*

Nitrous Ether as a Sensitive Reagent for Carbolic Acid.

BY PROF. J. F. EYKMAN, OF TOKIO, JAPAN.

If about 1 or 1.5 cubic centimeters of a very dilute solution of carbolic acid (about 1 in 10,000) be poured into a test-tube, then one to three drops of properly prepared spirit of nitrous ether be added, and afterwards about an equal volume of concentrated sulphuric acid be allowed to flow down the inside of the test-tube, so that two layers are formed, a fine rose color (best observed against a white background) will make its appearance at the line of contact of the two liquids. If the two layers are gradually mixed by swinging the test-tube about, the red zone becomes broader, and, finally, the whole liquid turns red. This reaction, which is very decided in solutions of 1 in 10,000, is still visible at much higher dilutions, even as high as 1 in 2,000,000. In the latter case, it is best to take a test-tube about two *cm.* (¾ inch) wide, into which is poured a layer about three *cm.* (about 1¼ inch) high of concentrated sulphuric acid mixed with *one* drop of spirit of nitrous ether; afterwards a layer of the phenol solution, about 1.5 to 2 *cm.* (⅝ to ¾ inch) is carefully placed on top by means of a pipette. After both layers have been gradually mixed by gently swinging the test-tube to and fro, a red tint may still be clearly observed by reflected light.

On comparing the sensitiveness of this test with that of other phenol reactions, it will be found that it surpasses nearly all of them.

According to Almen, the limit of sensitiveness of the different tests is as follows:

Ferric chloride	1 : 3,000
Hypochlorite and ammonia (Lex), though sometimes failing entirely at this dilution	1 : 50,000
Hypochlorite and aniline (Jacquemin)	1 : 50,000
Bromine water (Landolt)	1 : 60,000
Mercuric nitrate + nitrous acid (Dragendorff)	1 : 200,000
Mercurous nitrate + nitrous acid (Plugge)	1 : 15,000
Millon's reagent	1 : 1,000,000
Or, if 20 *cc.* of the phenol solution are used	1 : 2,000,000
Chlorate potassium + HCl + NH_3 (Rice)	1 : 12,000

Salicylic acid and solution of albumen show the same reaction, but with less sensitiveness. If the spirit of nitrous ether be replaced by a dilute solution of nitrite of potassium, only a yellow color is produced.

But, if a dilute solution of nitrite of potassium be mixed with a few drops of diluted sulphuric acid and a little alcohol, and one drop of this mixture (containing some ethyl nitrite) be used, in place of the spirit of nitrous ether, the above-described red color is also produced. Since, however, the commercial nitrite of potassium always contains nitrate, and not all its nitrous acid is converted into ethyl nitrite, the above mixture contains free nitric and free nitrous acids, which, when present in considerable quantity, interfere with the reaction, by causing a yellow or yellowish-red color.

For this reason, spirit of nitrous ether is especially valuable in producing the reaction. It never fails; and it would seem that the red color is produced neither by nitrous nor by nitric acid, but by the formation of other compounds of nitrogen and oxygen (NO ?) produced during the decomposition of ethyl nitrite by sulphuric acid.

Chinese Camphor.*

In China camphor is grossly adulterated with a glue obtained by boiling a rattan creeper, locally called T'engtsai. This weed, growing luxuriantly in the interior of Formosa, from whence, as every one is aware, all Chinese camphor is derived, is full of glutinous matter which boiling water converts into a colorless glue. Mixing this with the pure camphor and a small percentage of water, prevents evaporation, though naturally destroying the high quality of the article itself. Camphor so adulterated will keep, it is said, for a couple of months without loss; indeed, will bear the journey the Europe without suffering appreciable diminution. Experiments recently made have demonstrated the existence of two parts of glue to three of camphor in certain samples offered in the Tamsui market, rendering the article absolutely useless. Happily fire will readily detect the foreign body. Mr. Walter Lay, to whose admirable report upon the camphor trade in 1880 we are indebted for this information, adds: "I have obtained a sample of the plant from which the glue is obtained, but cannot find out what its botanical name is; indeed, I have not succeeded even in obtaining the correct Chinese characters for it. It is called locally T'ëngtsai, but it doubtless has a more distinctive appellation than that. It is not given in the 'Topography of Tamsui.' Mention is made in the Wahu report for 1878 of a plant which yields a glutinous substance on being boiled in water, and which is used in the manufacture of paper. The name given to it at Wahu is Yang Kont'éng, and this possibly may be the name of the creeper used here for the adulteration of camphor." Before the ruthless axe of the Chinese woodcutter the beautiful inland forests still adorned by the graceful *Laurus Camphora* are fast disappearing. The aborigines inhabiting the interior fight desperately for the possession of their woods; but each year sees a fresh tract surrendered to their indomitable enemies. To illustrate the difficulty attending the collection of the prized wood, it may be mentioned, on the authority of the above-named gentleman, that between five and six hundred Chinese were killed two years ago in the petty warfare which prevailed with the savages. Sooner or later there must be a dearth of camphor. With their customary want of common prudence the conquering race are recklessly clearing the ground for tea cultivation, burning up the camphor wood in tea-firing operations, for which purpose it can seemingly be used with perfect safety, despite the pungent fumes given forth.

Very little of the camphor manufactured in Formosa is consumed by the Celestials, nearly all being shipped to foreign countries. On the other hand, they continue importing for their own use the more precious natural article secreted by the *Dryobalanops Camphora* of Sumatra and Borneo. For these concrete masses, commonly known as Camphor Baroos, fancy prices are still paid—31*s.* a pound was the import price at Ningpo last year. Of this fine camphor, it may be added, but a small quantity finds its way to Europe; the relative cheapness of the manufactured article driving it quite out of our markets, although it is well known the native manufacturers in Formosa place no special reliance on their own product, which, they say, possesses little or no virtue—very little nowadays, one may opine, if adulteration is carried on to the extent asserted.

* From a paper on Chinese Materia Medica; by F. Newcome, in the *Med. Press and Circular.* Reprinted from *Pharm. Journal*, Sept. 16th.

Plant for the Manufacture of Iodine.

BY ROBERT HARVEY.

In 1877, the author received instructions from the proprietor of the nitrate of soda works, situated in the district of La Noria, province of Tarapacá, Republic of Peru, known as the "Peruana," to design and erect machinery for the manufacture of iodine from the mother-liquor of nitrate of sodium. The estimated amount to be produced was 2,500 pounds monthly. With the assistance of Mr. Nicasio Jofré, this was effected in the space of one month; but on trial it was found not sufficiently extensive to precipitate the whole of the iodine contained in the mother-liquor, part of which, after precipitation, returned to the nitrate-making machinery, causing considerable damage by corrosion to the steam pipes and boiling tanks used in the process.

The above-named works, however, became the property of the author and his partner, Mr. Z. F. North, in August, 1881, when the whole of the plant used in the manufacture of the iodine was thoroughly revised, improved, and considerably enlarged, with most satisfactory results, the production now being 3,500 pounds of sublimed iodine per month.

The process employed and the results obtained form the subject of this paper. Iodine occurs in *caliche* or raw nitrate deposit, as iodate of sodium, in quantities varying from mere traces to fifty per cent.

The *aqua vieja*, or mother-liquor, of these works contain about:

	Per Cent.
Nitrate of sodium, $NaNO_3$	28
Chloride of sodium, NaCl.	11
Sulphate of sodium, Na_2SO_4	3
Sulphate of magnesium, $MgSO_4$	3
Iodate of sodium, $NaIO_3$	22
Water, H_2O	33
	100

The mother-liquor is conducted through the pipe for mother-water to the precipitators, which are constructed of two-inch tongued and grooved timber, lined with sheet lead, to prevent leakage by warping and shrinking; they are stayed transversely by three-quarter-inch bolts. The reagent for precipitating the iodine is the run-off from the tanks for acid deposits in sufficient quantity to precipitate the iodine held in solution, which is determined by measuring previous to precipitation. The wings, or fans, which are also of wood, are then turned by hand until the liquor becomes thoroughly mixed with the acid.

This causes most of the iodine to fall to the bottom of the precipitators in slimes and flakes, and some to rise to the surface as a black froth. The iodine on the surface is skimmed off by large wooden spoons and placed in clarifying tanks, and the mother-liquor is then drawn off to the tank for mother-water after precipitation. From thence it is returned to the nitrate of sodium department where it is again used, again becomes impregnated with iodine, and again goes through a similar process.

The deposit of iodine left in the bottom of the precipitators is taken out and placed in the clarifying tanks where it undergoes a series of washings with pure water. It is then filtered and partially dried in a filter press, from whence it is taken and pressed in the forming press, and is removed from the movable bottom of the press in blocks of cheese form, 8 inches in diameter by 6 inches thick. The blocks are next placed in a cast-iron retort, to which are attached eight earthenware receivers, each 3 feet long by 2 feet 6 inches in diameter. The last or end receiver is stopped by a wooden end and clay joint. The joints of the receivers are also made of clay. When the retort is charged, the crude iodine is sublimed by a slow fire. After sublimation the retort is allowed to cool, the joints of the receivers are broken, the receivers taken down and emptied, and the contents placed in tarred kegs for exportation.

The crude iodine, previous to sublimation, contains: iodine, 80 to 85 per cent; non-volatile matter, 6 to 10 per cent; the remainder being water. The reagent for the precipitation of iodine is the acid sulphite of sodium, $NaHSO_3$, formed by saturating the aqueous solution of "salnatron" (impure carbonate of sodium, Na_2CO_3) with fumes of burning sulphur. "Salnatron" is formed by burning coal-dust with nitrate of sodium, thus: $2NaNO_3 + 2C = Na_2CO_3 + N_2O_3$. Its impurities consist of chloride and sulphate of sodium, earthy matters, and unburnt coal; the latter are eliminated by dissolving the salnatron in water and settling.

The fumes from the burning sulphur are generated in a fire-brick oven, and are drawn by an ejector from the oven to the drainer, which catches the particles of partly burned sulphur, and from the drainer to the cylindrical fume receivers, which are charged with "salnatron" solution, and are traversed with perforated pipes for the passage of the fumes.

The steam for the ejector is taken from a small horizontal boiler at the extremity of the building. The building is well ventilated, and is made of wood and corrugated iron.

The cost of this plant was 23,000 dollars Chilian currency. During the months of October and November, 1881, the author exported from Iquique 7,560 pounds of sublimed iodine, manufactured by this plant.—*The Chemists' Journal.*

Comparative Strength of some Opium Preparations.

In a paper lately read by Prof. C. Lewis Diehl before the Kentucky Pharmaceutical Association on "Liquor Opii Sedativus, Battley," the following comparison is made of the composition of several of the preparations of opium in common use:

Preparation.	Author or Maker.	Amt. of Dry Opium Represented in 100 Minims.	Amt. of Aqueous Extract Represented in 100 Minims	Amt of Residue of Evaporation of 100 Minims Dried at 212° F.	Amt. of Morphine in 100 Minims.	Basis for Calculations.
		Grs.	Grs.	Grs.	Grs.	
Liq. ext. opium	Br. Ph.	6.69	4 014	.....	0.703	Ext. opium, Br. Ph.
Tincture opium	Br. Ph.	7.11	4.266	..	0.853	Dry opium.
"	U. S. P.	7.81	4.686	.....	0.937	" "
Tr. opii acet.	U. S. P.	8.33	4.998	.....	1.000	" "
Wine of opium	U. S. P.	12.50	7.500	.....	1.500	" "
Vinegar of opium	U. S. P.	15.62	9.372	.....	1.874	" "
Liq. opii sedativus	Shuttleworth.	5 41	3.246	.....	0.650	Morphine.
" " "	Cooley	11.69	7.014	.....	1.403	Hard extract opium.
" " "	Wells	14.23	8.538	.....	1.707	Dry opium.
" " "	Battley	10.50	6.300	5.79	1.260	Morphine found.
Tr. opii deodorat.	Diehl	14.41	8.648	7.42	1.730	" "
Diehl		7.67	4.602	3.00	0.921	" "

The Active Principle of Adonis Vernalis.

BY DR. V. CERVELLO.

THE use of the Ranunculaceous plant, *Adonis vernalis* L., in fome forms of heart disease has led to some physiological experiments, from which it would appear that it is capable of exercising an action similar to that of digitalis, with the advantage that it is not cumulative, its administration during a considerable time being without danger. But hitherto nothing definite has been known with respect to the constituent or constituents of the plant to which the action is due. The author, as a result of a chemical investigation of the plant, states that it contains only one active constituent, a glucoside, which he has named "adonidin."

In the preparation of adonidin the plant is cut into small pieces, which are macerated during two days in dilute (50 per cent) alcohol; the liquid is filtered, the filtrate treated with basic acetate of lead, separated from the resulting precipitate by decantation, and evaporated on a water-bath to a syrupy consistence. The residue, which is very bitter and has an acid reaction, is carefully made slightly alkaline by the addition of ammonia solution, and then heated with a strong solution of tannic acid, which is added as long as any precipitate is formed. The precipitate is a compound of the active constituent and tannic acid, difficultly soluble in water. This is collected on a filter, washed with a small quantity of water, and dried between paper. To decompose this tannic acid compound, zinc oxide and some alcohol are added, and the whole is heated on a water-bath until the liquid is evaporated, when the mass is treated with strong alcohol, filtered, and the residue on the filter washed with much alcohol. The filtrate is yellow, and contains the adonidin not quite pure. To purify it the solution is evaporated by a gentle heat to a small volume and ether added, when inactive colored matter is precipitated together with a trace of adonidin. Upon evaporation of the mixture of alcohol and ether by a moderate heat, a residue is obtained which represents pure adonidin, and is finished by drying in a vacuum over sulphuric acid.

The quantity of adonidin obtained in this manner from two kilograms of *Adonis vernalis* was small; this the author does not consider due to any defect in the method of preparation, but to the fact that the compound, which is extremely energetic, is contained in the plant in relatively small proportion.

Adonidin is non-nitrogenous, colorless, odorless, amorphous, and extremely bitter. It is soluble in alcohol, but only slightly so in ether or in water. It is precipitated by tannic acid, the precipitate re-dissolving in much water. It is insoluble in dilute hydrochloric acid in the cold, but, on being heated with the dilute acid, it splits up into sugar and a substance insoluble in ether.

The author is not in a position to say whether the decomposition product has any action upon the organism analogous to the case of digitaliretin obtained under similar conditions from digitalin by Schmiedeberg.

With respect to the physiological action of adonidin, the author sums up the results of his experiments by stating that it may be described as identical with that of digitalin, with the single exception that it is far more powerful. He also confirms the statement that it is not cumulative.—*Pharm. Journ. and Trans.*, Aug. 12th, 1882, from *Arch. f. Exper. Path. u. Pharmak.*, xv.

Coca as an Assuager of Thirst.

SIR JOSEPH FAYRER has reported, through the *Medical Times*, his experience in the use of coca leaves, chewed during mountain climbing, as a means for preventing or relieving thirst. His experiment consisted in the distribution of about eighty grains of the leaf to each one of the four guides and porters who accompanied him. During the ten hours consumed by the excursion, no water and but a limited quantity of wine were consumed. They drank no tea nor coffee, nor did they use ice or snow. Nevertheless the chewing of the coca appeared to furnish great relief from thirst, and enable them to make the trip with comparative comfort.

Composition of Proprietary Preparations.

Double Chloride of Gold Cure for Drunkenness and the Opium Habit.—The composition is said to be the following:

Chloride of ammonium	1 grain
Aloin	2 grains
Comp. tinct. of cinchona	3 fl. oz.
Water, enough to make	4 fl oz.

Richter's Pain Expeller.—Dr. Gerhard states that the following formula will yield a preparation identical with it:

Tincture of capsicum, prepared from 200 parts of finely-powdered capsicum, and alcohol	600 Parts
Soap	22.5
Water	100
Water of ammonia	300
Camphor	30
Oil of rosemary	10
" lavender	10
" thyme	10
" cloves	10
" cinnamon	1½
Caramel	q. s.

Dissolve the soap in the water, add the solution to the tincture of capsicum, and finally add the other ingredients. Mix thoroughly and filter.

Tamar Indien.—Dr. Hager states that this well-known laxative is prepared thus:

Tamarind pulp	450 parts.
Sugar, powdered	40 "
Sugar of milk, powdered	60 "
Glycerin	50 "

Mix, with constant stirring, at a gentle heat, and evaporate to the consistence of syrup. Then incorporate with it:

Senna, in fine powder	50 parts.
Anise, in fine powder	10 "
Oil-sugar of lemon	3 "
Tartaric acid	3 "

Make the ingredients into a plastic mass with the fingers, and form the whole into oblong tablets of an inch and a half long, by nine-tenths of an inch broad, and half an inch thick, and sprinkle with a powder prepared in the following proportions:

Bitartrate of potassium, powdered	5 parts.
Sugar, powdered	35 "
Sugar of milk, powdered	35 "
Tragacanth, powdered	3 "
Tartaric acid, powdered	2 "
Red saunders, powdered	25 "

Allow the tablets to dry in a warm place for an hour, and wrap them in tin-foil.

Hager calls them "Saccharitæ tamarindinati lenientes." (Saccharitæ, nom. plur. from Saccharites, æ, masc., "candy.")—*Pharm. Centralhalle*, No. 26.

Carbonate of Ammonium as a Stimulant.

DR. E. P. BREWER, of Norwich, Ct., publishes in the *American Journal of the Medical Sciences* for July the results of a series of experiments undertaken for the discovery of the essential nature of the stimulant power of carbonate of ammonium. He declares, as a result of his labors, the belief that "the action of carbonate of ammonium is not due to the presence of the carbonic acid in combination with the base, but is dependent on the absorption of free ammonia while the salt is chemically combining with the hydrochloric acid of the gastric juice. The instability of the compound which renders it so susceptible of digestion is the quality that ranks it above all other ammoniacal salts." The practical deduction is that carbona e of ammonium is only serviceable as a stimulant for cases in which the secretion of gastric juice is but slightly affected. This is true of many acute maladies. In graver cases, when gastric digestion is deficient, the value of the remedy is correspondingly lessened. In chronic cases and in acute cases of long duration, such as the latter stages of fevers, it is practically valueless. Unlike alcohol, it possesses no nutrient properties.

The Use of Strontia in Sugar Refining.

THE use of hydroxide of strontium in order to obtain crystallized sugar from molasses and syrups, has already assumed large dimensions in German sugar refineries. This process, as invented by C. Scheibler, has also been covered in the United States by several patents, the respective claims being published in the *Chemical Review*. The molasses or saccharine solution must be diluted by water to such a degree that the required amount of the not easily soluble hydroxide of strontium may be dissolved therein at a temperature of about 160° to 170° F. Of the oxide of strontium, three molecules or equivalents are used to one equivalent of sugar. After the solution has been effected in the proper manner, the liquid is raised to the boiling point, and while being stirred, the strontium saccharate separates in the form of a heavy sandy powder, which, unlike the corresponding gelatinous and voluminous calcium saccharate, is close, deposits quickly from the solution, and is easily filtered. The separation of the strontium saccharate is effected by filter presses while the liquid is still boiling hot. The strontium saccharate is now treated by carbonic acid in watery solutions, preferably under pressure, whereby insoluble carbonate of strontia and a solution of sugar is formed, which are separated again by means of filter presses. A large portion of hydroxide of strontia may, however, be separated from the basic saccharate without the use of carbonic acid. The basic strontium saccharate is placed into warm water, and allowed to cool gradually, when a large quantity of the strontium hydroxide will crystallize on the walls of the vessel, and the liquid may be let off for further treatment with carbonic acid, while the separated hydroxide may be utilized in a subsequent operation. In order to provide the large amount of strontia, it is now proposed to utilize the large Sicilian beds of sulphate of strontia; while, on the other hand, it is contended that the strontia so obtained cannot compete with that obtained from strontianite.

On the Alkaloidal Value of Belladonna Plants at Different Periods of Growth.*

BY A. W. GERRARD, F.C.S.

AT last year's meeting of this Conference I presented my first report on belladonna, the main features of which demonstrated the relative atropine value of cultivated and wild plants. The wild variety was found to be richest in atropine, and, contrary to general opinion, the leaf in both varieties was found to be richer than the root.

In continuation, I have been able to examine this summer two specimens of the first year's growth of the plant; likewise the second year's growth at three periods of development, viz., before, during, and after flowering. The object as regards the second year's plant was to determine at what period it attains its maximum therapeutic value.

Immediately on receipt of the fresh plants, the leaves and roots were separated and well dried, the estimation of the atropine being completed in less than a month from the time of collection. This rapidity of manipulation was considered advisable, to avoid as much as possible the changes plants undergo by keeping.

In the present experiments the process by which the atropine has been estimated differs from that described in my first report, the method of extraction, however, has been the same; the difference is that I have employed a volumetric instead of a gravimetric method.

For this purpose, I titrate the ethereal alkaloidal residue with a centinormal sulphuric acid, one hundred parts of which is made to exactly neutralize one part of pure atropine. The alkaloid residue being but sparingly soluble in water I dissolve it in alcohol and color with litmus, so as to clearly indicate the critical point. This method I find both rapid and accurate; to test it, two samples of commercial atropine, and two made by myself from cultivated and wild plants, gave, upon titration, figures agreeing within one per cent. This result, whilst demonstrating the accuracy of the method, also shows that commercial atropine is a very pure substance.

The first year's plants examined were both uncultivated, one grown in Yorkshire on a chalk soil, the other in Sussex in leaf mould; none of these plants appeared to have flowered, they averaged six inches in height and twenty of them yielded on drying two hundred and three grains of leaf and one hundred and sixty-five grains of root. These two varieties gave the following results:

Atropine in 100 *parts Wild Belladonna, First Year's Growth.*

	Roots.	Leaves.
From chalk soil	.21	.23
From leaf mould	.09	.22

The only value of this experiment is to show that the plant in the first year of its growth contains about half the quantity of atropine present in older plants, and practically this is of little importance, as on account of its small growth it is never collected for the druggist's use. The result also helps to confirm what I have stated in my previous paper, viz., that a chalky soil favors the formation of atropine.

Examination of Second Year's Plant.

The cultivated kind only was subjected to analysis. It was grown by Mr. Ransom, of Hitchin, and gathered in the months of May, June, and July, June being the month when it is usually collected for the druggist's use, and would be expected to have arrived at maturity. The plants I received averaged three feet in height. The May plant, though not fully developed, had the most luxuriant crop of leaves. On the June plants the flowers were abundant, but the leaves were small. The July plant was covered with unripe fruits and small leaves.

Atropine in 100 *parts Cultivated Belladonna, Second Year's Growth.*

When collected.	Leaves.	Roots.
May	.25	.21
June	.36	.32
July	.34	.32

This result shows that the plant before flowering is not rich in active principles, but it appears that at the period of flowering the full development is reached and maintained into the fruiting season. Especially worthy of attention is the increase in the June yield of atropine, it being one-third more than obtained from the May plant. The experiment also shows a simultaneous development of root and leaf, and not the exhaustion of the former to strengthen the latter. The inference from this is that root and leaf should be gathered at the same period.

Throughout these experiments, as on former occasions, the leaves have uniformly yielded more atropine than the roots

* Read at the last meeting of the British Pharmaceutical Conference.

The Common Mushroom and its Poison.

PROF. PONFICK, of Breslau, has lately made experiments on the common mushroom, of which the following are the practical results: All common mushrooms are poisonous, but cooking deprives them in a greater or lesser degree of their poisonous qualities. The repeated washing with cold water which they usually undergo to clean them takes away a portion of the poison, and boiling does the rest; but the water in which they have been boiled is highly poisonous, and should always be carefully got rid of. Experiments made on dogs showed that if a dog ate one per cent of its own weight of raw mushrooms it fell sick, but recovered; if it ate one and a half per cent, the poison had a more violent but not fatal effect; and if it ate two per cent, it was inevitably fatal. The water in which mushrooms had been boiled was far more poisonous than even the raw mushrooms; while the mushrooms thus boiled could be taken without hurt to the amount of ten per cent of the weight of the dog's body. Washing with cold water does not remove all the poison, so that mushrooms thus prepared were poisonous when taken in larger quantities. Dried mushrooms are still dangerous for from twelve to twenty days, and also the water in which they have been boiled. They requiro to be dried for at least a whole month, and are only really safe after four months' drying.

NOTES, QUERIES AND ANSWERS.

Under this heading we shall, to the best of our ability, endeavor to answer such questions addressed to us, as come within the scope of this journal, provided they are accompanied by the name and address of the writer. Answers to queries received after the 5th of the month will lie over until the next issue. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for the formula of an unusual, patented, or proprietary compound, always accompany the query with any information you may already possess regarding the locality in which it is used, its use and reputed effects, in order to enable us to make inquiry without waste of time and labor. When it can conveniently be done, send also a specimen of the label used on packages of the compound.

No. 1093.—**Prescription Difficulty** (T. S. N.).

This correspondent writes:

A few days ago, I received the following prescription:

℞ Ferri pyrophosphatis,
Zinci bromidi.....āā ʒ i.
Tinct digitalis.....fl. ʒ vi.
Aquæ.....q.s. ad fl. ℥ iv.
Misce.

I dissolved the bromide of zinc in a small quantity of water, and added the tincture of digitalis. Upon dissolving the pyrophosphate in the rest of the water, and adding it to the zinc solution, it threw down a precipitate of a grayish color, making a muddy-looking mixture. Could the two salts be united in a prescription and make a decent looking mixture, or are they incompatible?

The officinal pyrophosphate of iron is a compound of real ferric pyrophosphate and of citrate of ammonium. The latter salt (in common with other alkali salts of many organic acids) has the property of rendering the former soluble in water. If an aqueous solution of this officinal pyrophosphate of iron is mixed with an aqueous solution of bromide of zinc, a white curdy precipitate is thrown down, which, on examination, is found to contain the original insoluble ferric pyrophosphate. Now, this precipitation is interesting, because it affords a clue to the other changes and reactions which are going on in the mixture. The pyrophosphate was kept in solution by citrate of ammonium. Its precipitation permits to conclude that the citrate of ammonium itself has been decomposed by the bromide of zinc. This is quite in accordance with the law that, if two or more salts come together in solution, the least soluble compounds are generally formed. Citrate of zinc being but sparingly soluble in water, this salt is no doubt formed (and also partly precipitated) along with bromide of ammonium. But citrate of zinc cannot keep ferric pyrophosphate in solution.

If an additional quantity of citrate of ammonium (or of sodium) be added after the iron-salt is precipitated, the latter will again dissolve, and a clear mixture result. Any citrate of zinc which has been co-precipitated with the iron-salt will also again enter solution. The above amount of pyrophosphate of iron (ʒ i.) will require a quantity of citrate of ammonium equivalent to about one drachm of citric acid, and the best way of procedure will be as follows:

Put one drachm (or a little more, since a small excess can do no harm) of powdered citric acid into a test-tube, add to it gradually water of ammonia until the solution exhales a feeble odor of the gas, then add another small crystal of citric acid to supersaturate the liquid. Having dissolved the bromide of zinc and the pyrophosphate each in about 1 fl. oz. of water, mix these solutions (whereby a precipitate will be produced, which appears to be greenish, but is in reality white, and merely suspended in a greenish liquid), and then add the solution of citrate of ammonium, which will re-dissolve the precipitate. Finally add the tincture and enough water to make the mixture measure 4 fl. oz.

The addition of citrate of ammonium, by the dispenser, without consulting the physician, may be defended by the general plea that the physician evidently meant to obtain a clear mixture, and that the added salt accomplishes the purpose without altering the therapeutic effect. Nevertheless, it is much preferable to notify the prescriber of the change, so that he may have an opportunity of learning the facts involved himself, and that the prescription, if at any time prepared by another dispenser, may have the same external appearance.

No. 1094.—**Koromiko** (J. S.).

This is the name of a new remedy, highly lauded by Dr. Jardine for treating dysentery and diarrhœa, even of long standing. It is derived from two New Zealand species of *Veronica*, namely, *Veronica salicifolia* and *V. parvifolia*. It is *said* to surpass all expectations, inasmuch as "it only requires four or five doses to effect a cure."

We are not credulous enough to believe all that is said in first reports. It would be somewhat singular if a true Veronica should be found to contain principles serviceable in those complaints, although it is not impossible. Yet the American species, notably *Veronica* (or *Leptandra*) *virginica* has entirely different properties.

No. 1095.—**Compound Elixir of Licorice as a Means for Disguising Quinine** (J. B. K.).

This correspondent wants information in regard to combining sulphate of quinine with simple elixir or elixir of glycyrrhiza so as to form a clear, elegant mixture. He states that he found great difficulty in doing so, as, by the addition of an acid, the glycyrrhizin was precipitated, and an unsightly mixture resulted.

If the quantity of quinine is small, in proportion to that of the elixir of licorice, the quinine (or sulphate of quinine) may be dissolved in water of ammonia. 1 *gm.* of sulphate of quinine requires about 14 to 17 *cc.* of water of ammonia. The presence of the latter, if properly diluted by the elixir, will do no harm, and will conduce to the transparency of the mixture.

If the quantity of quinine is considerable, it is much better to sacrifice the *appearance* of the mixture to its *efficacy*, that is, to merely suspend the sulphate of quinine in the elixir, and to have the mixture properly shaken up before administering a dose.

One of the best vehicles for administering quinine, besides elixir of licorice, is an infusion of coffee, with or without flavor of chloroform. A good formula is the following:

℞ Quininæ sulphatis.....gr. 10 (or more).
Infusi Coffeæ tostæ.....(1 : 10) fl. oz. 4
Syrupi Chloroformi..... fl. oz. 2.

Mix the sulphate of quinine with the infusion of roasted coffee, when cold, and add the syrup.

The "syrupus chloroformi" is prepared by dissolving 20 drops of chloroform in 2 fl. drachms of alcohol, and briskly shaking the liquid with 3 fl. oz. of syrup.

No. 1096.—**Effervescing Citrate of Magnesium** (J. B. K.).

We cannot give you a "cheaper" formula for this, since it would not be the officinal preparation if its constituents were replaced by cheaper ones, or were diminished in proportion.

It will be hardly necessary for us to mention that this solution is often *fraudulently* replaced by one containing tartrate of sodium instead of citrate of magnesium.

No 1097.—**Chilblain Liniment** (Inquirer). Try the following:

Sulphate of copper, pure.....6 grs.
Eau de cologne,
Distilled water .....āā. ½ fl. oz.
Dissolve. Apply twice a day with a camel's-hair brush.

No. 1098.—**Phenolphthalein** (W. K. N.).

It would probably be an unprofitable undertaking to try and prepare phenolphthaleïn on a small scale. It may be bought at a comparatively low price from most wholesale houses and dealers in chemicals at about $1.00 per ounce. Phenolphthaleïn is prepared by heating three parts of anhydrous phthalic acid with four parts of phenol and five parts of chloride of tin (stannic chloride) to 115° to 120° C. for eight hours. In place of the stannic chloride, sulphuric acid may be used. The product is then washed with boiling water, dissolved in solution of soda, and precipitated by acetic acid. It is a yellowish powder, crystallizing from alcohol in crusts, and melting at about 250° C. It is soluble in alkalies with a fine fuchsin-red color.

It is now used as one of the most delicate indicators in alkalimetry, and is, in many cases, much preferable to litmus, although it is by no means indifferent towards carbonic acid. On the chemistry of phenolphthaleïn, any modern text-book of organic chemistry may be consulted (f. i., *Richter*, Chemie der Kohlenstoffverbindungen. 8vo. Bonn, 1882, p. 733, etc.), or the original articles may be consulted in the *Annalen der Chemie*, vol. ccii., 68, etc.

Compare also NEW REMEDIES, 1877, p. 261; 1879, p. 50.

No. 1099.—**Liquor Bismuthi et Hydrastis** (Ch. K.).

This correspondent wants to know the composition of a preparation sold under the above name in the West. If any of our readers can give it, we will publish it, but it is altogether impossible for us to find out the composition of all the nostrums in the market.

No. 1100.—**Classification of Drugs of Vegetable or Animal Origin contained in the New United States Pharmacopœia.**

In compliance with a request received from several students of pharmacy, we publish here a classified synopsis of the vegetable and animal drugs of the new Pharmacopœia, arranged according to the *Natural Orders*. This synopsis will be found useful for study, inasmuch as it brings together allied drugs, and, at the same time, facilitates the retention of each class by memory.

(The figures indicate the pages of the United States Pharmacopœia.)

Algæ: Chondrus, 77.

Apocynaceæ: Apocynum, 40.

Aquifoliaceæ: Prinos, 271.

Araceæ: Calamus. 58.

Aristolochiaceæ: Serpentaria, 292.

Asclepiadaceæ: Asclepias, 49.

Aurantiaceæ: Aurantii Amari Cortex, 51. Aurantii Dulcis Cortex, 51. Aurantii Flores, 51. Limonis Cortex, 190. Limonis Succus, 190. Oleum Aurantii Corticis, 234. Oleum Aurantii Florum, 234. Oleum Bergamii, 234. Oleum Limonis, 238

Aves (*Gallinæ*): Vitellus, 379.

Berberidaceæ: Caulophyllum, 68. Podophyllum, 260.

Burseraceæ: Myrrha, 228.

Caprifolia eæ: Sambucus, 287. Viburnum, 374.

Celastraceæ: Euonymus, 99.

Chenopodiaceæ: Chenopodium, 74. Oleum Chenopodii, 235.

Compositæ: Absinthium, 1. Anthemis, 37 Arnicæ Flores, 48. Arnicæ Radix, 48. Calendula, 61. Eupatorium, 99. Grindelia, 173. Inula, 185 Lactucarium, 189. Lappa, 189. Matricaria, 219. Oleum Erigerontis, 236. Pyrethrum, 274. Santonica, 288. Santoninum, 288. Tanacetum, 331. Taraxacum 331.

Coniferæ: Juniperus, 188. Oleum Juniperi, 237. Oleum Sabinæ, 242. Oleum Terebinthinæ, 244. Pix Burgundica, 256. Pix Canadensis, 258. Pix Liquida, 258. Resina, 280. Sabina, 285. Terebinthina, 332. Terebinthina Canadensis, 332. Thuja, 332.

Convolvulaceæ: Jalapa, 187. Scammonium, 290.

Cornaceæ: Cornus, 87.

Cruciferæ (*Siliquosæ*): Oleum Sinapis Volatile, 243. Sinapis Alba, 292. Sinapis Nigra, 292.

Cucurbitaceæ: Bryonia, 57. Colocynthis, 85 Elaterinum, 92. Pepo, 247.

Cupuliferæ: Castanea, 68. Galla, 168, Quercus Alba, 276.

Ericaceæ: Chimaphila, 74. Gaultheria, 168. Oleum Gaultheriæ, 237. Uva Ursi, 372.

Erythroxylaceæ: Erythroxylon, 99.

Euphorbiaceæ: Cascarilla, 67. Kamala, 188. Oleum Ricini, 241. Oleum Tiglii, 244. Stillingia, 312.

Filices: Aspidium, 50.

Fungi: Ergota, 98. Ustilago, 372.

Gentianaceæ: Chirata, 75. Gentiana, 169.

Geraniaceæ: Geranium, 169.

Graminaceæ: Amylum, 36. [Secale cereale, 98.] Maltum, 215. Saccharum, 285. Triticum, 358. [Zea Mays, 372.]

Granataceæ: Granatum, 173.

Guttiferæ: Cambogia, 63.

Hamamelaceæ: Hamamelis, 174. Styrax, 313.

Insecta (*Coleoptera*): Cantharis, 64.—(*Hemiptera*): Coccus, 82.—(*Hymenoptera*): Cera Flava, 69. [Cera Alba, 68.] [Galla, 168.]

Iridaceæ: Crocus, 88. Iris, 187.

Juglandaceæ: Juglans, 188.

Labiatæ: Hedeoma, 175. Lavandula, 189. Marrubium, 217. Melissa, 220. Mentha Piperita, 221. Mentha Viridis, 221. Oleum Hedeomæ, 237. Oleum Lavandulæ, 238. Oleum Lavandulæ Florum, 238. Oleum Menthæ Piperitæ, 239. Oleum Menthæ Viridis, 239. Oleum Rosmarini, 242. Oleum Thymi, 244. Origanum, 247. Rosmarinus, 284. Salvia, 287. Scutellaria, 291. Thymol, 332.

Lauraceæ: Camphora, 63. Cinnamomum, 82. Oleum Cinnamomi, 235. Oleum Sassafras, 243. Sassafras, 289. Sassafras Medulla, 290.

Leguminosæ (*Cæsalpinieæ*): Cassia Fistula, 67. Senna, 291. Tamarindus, 331.—(*Mimoseæ*): Acacia, 8. Catechu, 68 —(*Papilionaceæ*): Balsamum Peruvianum, 52. Balsamum Tolutanum, 53. Chrysarobinum, 77. Copaiba, 86. Glycyrrhiza, 171. Hæmatoxylon, 174. Kino, 188. Oleum Copaibæ, 235 Physostigma, 249. Physostigminæ Salicylas, 249. Santalum Rubrum, 287. Scoparius, 290. Tragacantha, 358.

Lichenes: Cetraria, 72.

Liliaceæ: Allium, 27. Aloe, 28. Scilla, 290.

Linaceæ: Linum, 193. Oleum Lini, 238.

Lobeliaceæ: Lobelia, 211.

Loganiaceæ: Gelsemium, 169 Ignatia, 183. Nux Vomica, 229. Spigelia, 314. Strychnina, 312. Strychninæ Sulphas, 313.

Lycopodiaceæ: Lycopodium, 212.

Magnoliaceæ: Illicium, 183. Magnolia, 215. Oleum Anisi (in part), 233.

Malvaceæ: Althæa, 28. Gossypii Radicis Cortex, 172. Gossypium, 172. Oleum Gossypii Seminis, 237.

Mammalia (*Cetacea*): Cetaceum, 72.—(*Pachydermata*): Adeps, 24. Oleum Adipis, 232. Pepsinum Saccharatum, 247.—(*Ruminantia*): Fel Bovis, 153. Moschus, 227. Saccharum Lactis, 286. Sevum, 292.

Melanthaceæ: Colchici Radix, 83. Colchici Semen, 83. Veratrina, 373. Veratrum Viride, 374.

Meliaceæ: Azedarach, 52.

Menispermaceæ: Calumba, 61. Menispermum, 220. Pareira, 247. Picrotoxinum, 250.

Myristicaceæ: Macis, 212. Myristica, 228. Oleum Myristicæ, 240.

Myrtaceæ: Caryophyllus, 67. Eucalyptus, 99. Oleum Cajuputi, 234. Oleum Caryophylli, 235. Oleum Eucalypti, 256. Oleum Myrciæ, 239. Oleum Pimentæ, 241. Pimenta, 256.

Oleaceæ: Manna, 216. Oleum Olivæ, 240.

Orchidaceæ: Cypripedium, 90. Vanilla, 373.

Papaveraceæ: Chelidonium, 74. Codeina, 82. Morphina, 225. Morphinæ Acetas, 225. Morphinæ Hydrochloras, 226. Morphinæ Hydrobromas, 226. Morphinæ Sulphas, 226. Opium, 245. Sanguinaria, 287.

Pedaliaceæ: Oleum Sesami, 243.

Phytolaccaceæ: Phytolaccæ Bacca, 250. Phytolaccæ Radix, 250.

Piperaceæ: Cubeba, 88. Matico, 219. Oleum Cubebæ, 236. Piper, 257. Piperina, 257.

Pisces (*Sturiones*): Ichthyocolla, 182.—(*Teleostia, Gadida*): Oleum Morrhuæ, 239.
Polygalaceæ: Krameria, 189.* Senega, 291.
Polygonaceæ: Rheum, 282. Rumex, 285.
Ranunculaceæ: Aconitum, 24. Cimicifuga, 78. Hydrastis, 181. Pulsatilla, 271. Staphisagria, 311.
Rhamnaceæ: Frangula, 168.
Rosaceæ: (*Amygdaleæ*): Amygdala Amara, 35. Amygdala Dulcis, 35. Oleum Amygdalæ Amaræ, 233. Oleum Amygdalæ Expressum, 233. Prunum, 271. Prunus Virginiana, 271.—(*Pomeæ*): Cydonium, 89.—(*Dryadeæ*): Rubus, 284. Rubus Idæus, 284.—(*Roseæ*): Brayera, 57. Oleum Rosæ, 241. Quillaia, 276. Rosa Centifolia, 283. Rosa Gallica, 284.
Rubiaceæ: (*Cinchoneæ*): Chinoidinum, 75. Cinchona, 78. Cinchona Flava, 79. Cinchona Rubra, 80. Cinchonidinæ Sulphas, 80 Cinchonina, 81. Cinchoninæ Sulphas, 81. Quinidinæ Sulphas, 276. Quinina, 277. Quininæ Bisulphas, 277. Quininæ Hydrobromas, 278. Quininæ Hydrochloras, 278. Quininæ Sulphas, 279. Quininæ Valerianas, 280.—(*Coffeæ*): Caffeina, 58. Ipecacuanha, 187.
Rutaceæ: (*Diosmeæ*): Buchu, 58.—(*Ruteæ*): Oleum Rutæ, 242.—(*Xanthoxyleæ*): Pilocarpinæ Hydrochloras, 251. Pilocarpus, 251. Xanthoxylum, 379.
Salicaceæ: Salicinum, 286. Salix, 286.
Santalaceæ: Oleum Santali, 242.
Sapindaceæ: Caffeina, 58. Guarana, 174.
Sapotaceæ: Gutta-Percha, 174.
Scrophulariaceæ: Digitalis, 91. Leptandra, 190.
Simarubaceæ: Quassia, 275.
Smilaceæ: Sarsaparilla, 289.
Solanaceæ: Atropina, 50 Atropinæ Sulphas, 51. Belladonna, 53. Capsicum, 65. Dulcamara, 91. Hyoscyaminæ Sulphas, 182. Hyoscyamus, 182. Stramonii Folia, 312. Stramonii Semen, 312. Tabacum, 331.
Sterculiaceæ: Oleum Theobromæ, 244.
Styraceæ: Benzoinum, 54.
Terebinthaceæ (*Anacardieæ*): Mastiche, 218. Rhus Glabra, 283. Rhus Toxicodendron, 283.
Ternstræmiaceæ: Caffeina, 58.
Thymelaceæ: Mezereum, 221.
Umbelliferæ (*Campylospermæ*): Conium, 86.—(*Cœlospermæ*): Coriandrum, 87. Oleum Coriandri, 236.—(*Orthospermæ*): Ammoniacum, 31. Anisum, 36. Asafœtida, 49. Carum, 67. Fœniculum, 167. Galbanum, 168. Oleum Anisi, 233. Oleum Cari, 235. Oleum Fœniculi, 236. Sumbul, 316.
Urticaceæ (*Artocarpeæ*): Ficus, 167.—(*Cannabineæ*): Cannabis Americana, 64. Cannabis Indica, 64. Humulus, 175. Lupulinum, 211.—(*Ulmeæ*): Ulmus, 365.
Valerianaceæ: Oleum Valerianæ, 245. Valeriana, 373.
Violaceæ: Viola Tricolor, 379.
Zingiberaceæ: Cardamomum, 66. Zingiber, 384.
Zygophyllaceæ: Guaiaci Lignum, 173. Guaiaci Resina, 173.

As a supplement to the above we append a list of the crude drugs (of vegetable or animal origin) dropped and a list of those newly introduced:

List of Crude Drugs dropped from the Pharmacopœia.

Achillea. Aconiti Folia. Aloe Barbadensis. Aloe Capensis. Angustura. Apocynum Androsæmifolium. Aralia Nudicaulis. Aralia Spinosa. Asarum. Asclepias Incarnata. Asclepias Syriaca. Avenæ Farina. Berberis. Caffea. Canella. Canna. Carota. Carthamus. Cassia Marilandica. Castoreum. Cataria. Cinchona Pallida. Conii Folia. Coptis. Cornus Circinata. Cornus Sericea. Cotula. Curcuma. Delphinium. Diospyros. Dracontium. Elaterium. Erigeron. Erigeron Canadense. Euphorbia Corollata. Euphorbia Ipecacuanha. Fermentum. Frasera. Gentiana Catesbæi. Geum. Gillenia. Granati Fructus Cortex. Helianthemum. Helleborus. Hepatica. Heuchera. Hordeum. Hyoscyami Semen. Iris Florentina. Juniperus Virginiana. Lini Farina. Liriodendron. Lycopus. Maranta. Monarda. Mucuna. Nectandra. Oleum Camphoræ. Oleum Succini. Ovum. Panax. Papaver. Petroselinum. Polygala Rubella. Quercus Tinctoria. Ranunculus. Rubia. Ruta. Sabadilla. Sabbatia. Sago. Sesamum. Simaruba. Solidago. Spiræa. Statice. Syrupus Fuscus. Tapioca. Tormentilla. Triosteum. Uva Passa. Veratrum Album. Vinum Portense. Vinum Xericum. Viola. Xanthorrhiza.

List of Crude Drugs (and Immediate Derivatives) Added to the Pharmacopœia.

Arnicæ Radix. Bryonia. Caffeina. Calendula. Caulophyllum. Chelidonium. Chinoidinum. Chrysarobinum. Cinchonidinæ Sulphas. Cinchonina. Codeina. Elaterinum. Erythroxylon. Eucalyptus. Fel Bovis. Frangula. Grindelia. Guarana. Hamamelis. Hyoscyaminæ Sulphas. Illicium. Maltum. Menispermum. Oleum Adipis. Oleum Aurantii Corticis. Oleum Aurantii Florum. Oleum Coriandri. Oleum Eucalypti. Oleum Gossypii Seminis. Oleum Lavendulæ Florum. Oleum Myrciæ. Oleum Santali. Oleum Sinapis Volatile. Opii Pulvis. Pepsinum Saccharatum. Physostigminæ Salicylas. Picrotoxinum. Pilocarpinæ Hydrochloras. Pilocarpus. Piperina. Pulsatilla. Quillaia. Quinidinæ Sulphas. Quinina. Quininæ Bisulphas. Quininæ Hydrobromas. Quininæ Hydrochloras. Resina Copaibæ. Rubus Idæus. Salicinum. Staphisagria Sumbul. Thuja. Thymol. Triticum. Ustilago. Viburnum. Vinum Album. Vinum Rubrum. Viola Tricolor. Vitellus.

No. 1101.—**Alleged Substitution in a Prescription** (R. M., Brooklyn, N. Y.).

"Please to answer in your next issue, whether a physician has the right to object to and send back an ounce of lactopeptin if put up as a regular prescription in a round box, and labeled and directed as ordered by the doctor, as an imposition and a substitute for what he ordered? The article put up, which was returned, was taken from a regular one-half pound bottle of lactopeptin, prepared by the Pharmacal Co., the only manufacturers of that article."

Certainly not. Such a proceeding on the part of a physician is quite unwarrantable, unless he had good reason for believing that the article furnished was not what he ordered. In the present instance, the doctor may have been more familiar with the advertisements of the manufacturers than with the article itself. Many pharmacists are accustomed to dispense *all* proprietary remedies in other packages than those in which they are found in the trade, when they are prescribed by physicians.

No. 1102.—**Boroglyceride** (A. L.).

This is the name of a new antiseptic discovered by Prof. Barff. Its mode of preparation is given, in the original paper, in several steps, the mixture being allowed to cool each time. But it seems to us that the combination of boracic acid and glycerin can probably be accomplished in a single operation by exposing the ingredients long enough to a sufficient temperature in a closed boiler (under pressure). The method of preparation given in the report of Prof. Barff's discovery is substantially as follows:

Heat ninety-two parts of glycerin to a rather high temperature; then gradually add to it sixty-two parts of finely powdered boracic acid, in small quantities at a time, with frequent stirring. During the operation, steam is given off, and the acid, at first, dissolves rapidly; towards the end, quite slowly. If the mixture be allowed to cool immediately after the boracic acid is melted, a crystalline precipitate separates out. The weight of the total product will be one hundred and thirty-one parts, and it will have a sweet taste. Now heat a second time; a crystalline precipitate again separates on cooling, and steam is freely given off. When cold, the product will weigh one hundred and sixteen parts. As the chemical combination becomes more perfect, the solubility in water increases. Heat a third time: no crystalline precipitate will separate, but the mass, when cold, sets like ice, is brittle, chips readily, and the pieces are hard and dry. The boroglyceride thus formed communicates no flavor whatever to the substances to

* Krameria is classed by Grisebach, Eichler, and Luerssen, among the *Leguminosæ, Papilionaceæ.*

which it is added, or which are immersed in the preservative solution. In proportion as the glycerin is decomposed and chemically united with the boracic acid, the sweet principle disappears. The weight is now one hundred parts, being a total loss of fifty-four parts, corresponding to the loss of three molecules of water. Boroglyceride may be regarded as a borate of glyceryl, the three atoms of hydrogen of boracic acid being replaced by glyceryl (C_3H_5):

H_3BO_3	+	$C_3H_5(HO)_3$	=	$C_3H_3BO_3$	+	$3H_2O$.
Boracic Acid.	+	Glyceryl hydrate Glycerin.	=	Glyceryl borate "Boroglyceride."	+	Water.

Further particulars will be found in our June number, pp. 166 to 167.

No. 1103.—**Bromochloral** (E. S. J.).

We are not aware that this substance has, as yet, been experimented with, therapeutically. It has only recently been obtained and studied chemically. The following abstract of a paper by O. JACOBSEN and R. NEUMEISTER, in the *Ber. d. Deutsch. Chem. Ges.* (1882, p. 599), gives a brief account of this substance and of several allied bodies:

"It is well known that dichloracetal is formed as an intermediate product in the preparation of chloral alcoholate by the action of chlorine on alcohol, and that by the further action of chlorine, ethyl chloride, and chloral alcoholate are obtained thus:

$$CHCl_2CH(OC_2H_5)_2 + Cl_2 = CCl_3.CH(OH)OC_2H_5 + C_2H_4Cl.$$

"In a similar manner, the action of bromine on dichloracetal gives *bromochloral alcoholate*, and the action of bromine on monochloracetal gives chlorobromal alcoholate.

"*Bromochloral*, $CCl_2Br.COH$, obtained by decomposing the alcoholate with cold concentrated sulphuric acid, is a colorless liquid having an odor similar to that of chloral, but inducing tears even more strongly. Boiling point=126° C., specific gravity at 15°=1.9176. It becomes yellow at exposure to light. In presence of sulphuric acid, it polymerizes to *metabromochloral*, which is an amorphous, porcelain-like, scentless mass, insoluble in water, alcohol, and ether; it is reconverted into bromochloral on heating to 270°. *Bromochloral hydrate*, $CCl_2Br.CH(OH)_2$ is a hygroscopic, crystalline mass, easily soluble in water, alcohol, and ether, but less soluble in chloroform, from which it crystallizes in rhombic plates (melting point, 51°). Bromochloral alcoholate, $CCl_2BrCH.(OH).OC_2H_5$, crystallizes in fine silky needles (melting point 43°). Bromochloralid, $C_8H_2Cl_4Br.G_3$, obtained by heating a mixture of bromochloral and ordinary sulphuric acid containing a little of the fuming acid, crystallizes in colorless prisms (melting point 122°). Chlorobromal, $CClBr_2COH$, is a colorless liquid (boiling point 148° to 149°); specific gravity 2.2793 at 15°, similar to bromochloral, except that it does not undergo polymerization in presence of sulphuric acid. Chlorobromal hydrate, $CClBr_2CH(OH)_2$, crystallizes in small prisms (melting point 51° to 52°). *Chlorobromal alcoholate*, $CClBr_2.CH\ OH)OEt$, forms long needles (melting point 46°). Bromochloral and chlorobromal, like chloral, combine directly with amides. The compounds with acetamide crystallize from hot alcohol in leaflets, the melting point (158°) being identical with that of the corresponding compounds of bromal and chloral, which they also resemble in other respects. Bromochloral and chlorobromal hydrates give bromochloroform or chlorobromoform respectively when treated with potash. *Bromochloroform*, $CHBrCl_2$, is a colorless liquid (boiling point 91° to 92°; specific gravity 1.9254 at 15°) which gradually becomes yellow on exposure to light *Chlorobromoform*, $CHBr_2Cl$, is a liquid similar to the preceding compound (boiling point=123° to 125° with slight decomposition; specific gravity 2.445 at 15°).

Wanted.—Formulas for "Kendall's Spavin Cure," "Snow Cream" for Soda Water, "Gardiner's Rheumatic and Neuralgic Compound," "Lydia Pinkham's Compound," "Warner's Safe Kidney Cure," "Blair's Gout and "Rheumatic Pill," "Tilden's Firwein."

Diamond Ink for Glassware.

IN answer to query 1,081, I would refer "J. W. A." to NEW REMEDIES, January, 1880, p. 29, where will be found a description of email ink, the article, I think, sold at the Atlanta Exposition. J. J.

NOTE BY ED. N. R.—We have no means of knowing whether the two articles are alike. But we are greatly obliged to our correspondents for the information, as we shall have occasion to try some of both kinds of ink soon ourselves. If our experience brings out facts differing from these already on record in these columns, we shall communicate the facts.

Cement for Amber.

THE *Canadian Pharmaceutial Journal* states that amber may be cemented by moistening the surfaces with solution of potassa and pressing them together.

Commercial Report on Essential Oils.

MESSRS. E. SACHSSE & CO., of Leipzig, have sent us their latest trade circular, from which we extract the following:

Oil of Anise, I, Russian, rectified (18.75 marks pe kilo). According to all reports, much damage has been done by bad weather to the crops. The yield promises to be but small, and prices will undoubtedly advance.

Oil of Bergamot, I, Reggio (19.50 marks per kilo Scarcely any trustworthy stocks are remaining in firs hands. The new crop cannot be expected before Decem ber or January, and is said to be less satisfactory than a first expected. The same is the case with

Oil of Lemon, for which extremely high prices are asked at present at all places of production. Sachsse & Co. offer it at 21 marks per kilo.

Oil of Citronella is expected to be higher, since several of the largest producers in Ceylon have abandoned it in favor of coffee cultivation.

Oil of Eucalyptus had long been scarce, but new supplies have now been received from Melbourne (7.50 marks per kilo).

Oil of Lavender Flowers. A larger harvest than last year has brought about a decline. The new oil presently expected on the market (quintessence des fleurs mondées) will sell at 16.50 marks the kilo.

Oil of Palmarosa, genuine Turkish, of finest quality, is available in any desired quantities at 18 marks per kilo.

Oil of Patchouly, distilled by Sachsse & Co. is offered at 54 marks per kilo.

Oil of Peppermint. The harvest in England and in the United States is reported an almost total failure. Sachsse & Co. offer the different kinds at the following prices:

Mitcham oil (best, genuine),	70	marks	per kilo.
American " (rectified),	30	"	" "
German " "	32	"	" "

Oil of Rose has advanced about thirty-five per cent in price in consequence of very unfavorable results from this year's distillation in the Balkan districts. Sachsse & Co. quote "guaranteed pure oil" ("garantirt reine 'primissima' Waare") at 1150 marks per kilo.

Massachusetts Analysts.—The State Board of Health have appointed as analysts under the new law against food and drug adulterations, Prof. E. S. Wood, M.D., of the Harvard Medical School, and Prof. B. F. Davenport, M.D., of the Massachusetts College of Pharmacy. Stringent laws against adulterations are enforced in various European countries, but it is stated as an interesting fact that a verdict has never yet been obtained under the earlier Massachusetts statutes against adulterations. It will be remembered that a few years ago certain manufacturers in the city of Boston were charged with using deleterious substances in the manufacture of candy, and that they escaped conviction upon a lawyer's quibble as to whether candy is "food.'

BIBLIOGRAPHY.

PHARMACOPŒIA GERMANICA. Editio altera (sm. 4to). Berolini. 1882. (Printed in the Government Printing Office.)

THE official Latin edition of the new German Pharmacopœia has just reached us. We have, for some time past, been in possession of a printed copy of the German text as finally adopted by the German Committee of Revision, and we have given several extracts from it to show how the different subjects have been treated. On glancing over the Latin version, we have observed, so far, no important alterations, except in some figures, and a few less important formulæ.

The style of the Latin composition is smooth and pleasing, at least in all such passages which are free from uncouth, modern-barbarous terms; and, where the latter occur, the translator appears to have done the utmost possible to file down the roughness. But, after all, it is, in our humble opinion, a perfect waste of time to attempt, in our days, the rendering of modern chemical processes into anything like good Latin. The study and translation, back and forth, of the new German Pharmacopœia, will undoubtedly be a great field of exercise for the younger members of the profession, and be the means of compelling them to acquire and retain a good deal of classical lore; and this is, in our opinion, the only plea in its favor; still, there will be but few who will consult the Latin text when executing one of the tests prescribed by the work.

As a specimen of the translation, which exhibits both the *facility* and the *salebrosity* of the style, we print here the *Assay of Cinchona Bark*, the German text of which was rendered by us in English, on page 200 of our July number.

"Cujus pulveris (scil. Chinæ) *grammatis viginti* cum *grammatis decem* Liquoris Ammonii caustici, *grammatis viginti* Spiritus, *grammatis centum septuaginta* Ætheris identidem ac vehementer conquassatis, uno die peracto *grammata centum viginti* limpide decantha. *Centimetris cubicis tribus* Acidi hydrochlorici volumetrici additis, Ætherem destillando aut exhalando remove, tum, si necesse erit, tantum Acidi hydrochlorici adde, quantum ad acidulandum requiritur. Quo facto liquor filtratus frigore cum *centimetris cubicis tribus et dimidio* Liquoris Kali caustici volumetrici commiscetur. Simulatque substantiæ alcaloideæ subsederint, in liquorem limpidum superstantem tantum Liquoris Kali caustici instilla, quantum requiritur, ut sedimentum subsequens non oriatur. Postremo sedimenta in filtrum collecta elue paullatim exigua Aqua, donec guttæ defluentes, dum in superficiem solutionis Chinini sulfurici aquosæ, neutralis, frigore saturatæ incidunt, hanc turbare desierint. Liquore delapso, alcaloidea inter chartam bibulam leniter pressa aëre tantum sicca, quantum satis est, ut, in parvam patinam vitream immissa, super Acido sulfurico et postremo in balneo vaporis prorsus siccari possint. Alcaloidea sic effecta ne sint ponderis minoris quam *grammatum* 0.42. Quorum pauxillum si cum *pondere* Aquæ *trecenties* tanto majore coxeris, refrigeratione facta, flocci Chinini in liquore filtrato precipitentur. Cujus solutionis decanthatæ et refrigeratæ *partibus quinque* si *partem unam* Aquæ chloratæ addideris et statim Liquorem Ammonii caustici instillaveris, color belle viridis oriatur."

In the following, we give a synopsis of the principal differences between the preparations of the former and the present German Pharmacopœia, without going into details of processes, nor enumerating the abandoned or newly adopted articles The words following the date 1872 refer to the preparations in the first German Pharmacopœia, and those following 1882 refer to those of the new

Acetum. 1872: required to saturate $\frac{1}{50}$ of its weight of anhydrous sodium carbonate.—1882: 1 *gm.* is required to saturate 1 *cc.* of vol. sol. of soda.

Acidum Aceticum. 1872: required to dissolve $\frac{1}{10}$ of its weight of citric acid.—1882: Spec. gr. 1.064, containing 96% absolute acid.

Acidum Aceticum Dilutum. 1872: Spec. gr. 1.040.—1882: Spec. gr. 1.041. 10 *gm.* are required to saturate 50 *cc.* of vol. sol. of soda.

Acidum Carbolicum Crudum. 1872: containing at least 50% of carbolic acid. 1882: On shaking 10 vol. of the acid with 90 vols. of a mixture of equal parts by weight of solution of soda (sp. gr. 1.159–1.163) and water, not more than 1 vol. of undissolved matter should separate.

Acidum Carbolicum Crystallizatum. 1872: Should melt at 25–30° C ; soluble in 50–60 parts of cold water.—1882: Melts at 35°–44° C.; soluble in 20 p. water.

Acidum Carbolicum Liquefactum. New, 1882: Carbolic acid 100, and Distilled Water 10 parts.

Acidum Formicicum. New, 1882: Sp. gr. 1.060–1.063, containing 25% formic acid. 10 *gm.* should neutralize 54.35 *cc.* of vol. sol. of potassa.

Acidum Lacticum. 1872: Sp. gr. 1.240.—1882: Sp. gr. 1.210–1.220.

Acidum Nitricum Fumans. 1872: Sp. gr. 1.520–1.525.—1882: Sp. gr. 1.450–1.500.

Acidum Sulfuricum : 1872: Sp. gr. 1.840.—1882: Sp. gr. 1.836–1.840.

Æther. 1872: Sp. gr. not over 0.728.—1882: Sp. gr. 0.724–0.728.

Amylium Nitrosum. New, 1882: To be preserved over tartrate of potassium.

Aqua Amygdalarum Amarum : 1872: 10 *gm.*, mixed with ammoniacal solution of silver, then with nitric acid, yield 0.05 dry cyanide of silver.—1882: 27 *gm.*, diluted with 54 *gm.* of water and mixed with milk of magnesia and some potassium chromate, require 10 *cc.* of tenth-normal sol. of nitrate of silver until a permanent red color is produced.

Aqua Calcariæ. 1872: Should become turbid on heating and by blowing air through it.—1882: 100 *cc.* should not acquire an acid reaction after the addition of 3.5–4 *cc.* of vol. sol. of oxalic acid.

Aqua Chlorata. 1872 : 100 *gm.*, mixed with 3 *gm.* of ferrous sulphate and some hydrochloric acid, should not decolorize potassium permanganate.—1882 : 25 *gm.*, mixed with 1 *gm.* of iodide of potassium and some gelatinized starch, should require at least 28.2 *cc.* of tenth-normal sol. of hyposulphite of sodium.

Aqua Lauro-Cerasi. 1882 : In place of it, Aqua Amygdal. Amar. is to be dispensed.

Axungia Mineralis. New, 1882 : (German litle : Vaselin) prepared from Ceresin 1 and Paraffin-Oil 4 parts. Melt. point between 35° and 45° C.

Balsam of Peru. 1872 : Sp. gr. 1.150–1.160.—1882 : Sp. gr. 1.137–1.145.

Calcaria Chlorata. 1872 : Containing 25% of active chlorine —1882: Contaiaing 20% of active chlorine. 0.5 *gm* , mixed with 100 *gm.* of water, then with 2 *gm.* of iodide of potassium, 20 drops of hydrochloric acid and some gelatinized starch, should require 28.5 *cc.* of the vol. sol. of hyposulphite of sodium.

Catechu. 1872: Only from Acacia Catechu.—1882: Both from the former and from Uncaria Gambir.

Cera Alba. 1872: Sp. gr. 0.970.—1882: 0.965–0.975.

Cera Flava. 1872: Sp. gr 0.960.—1882: 0.955–0.967.

Chloroformium. 1872 : Sp. gr. 1.492–1.496.—1882: Sp. gr. 1.485–1.489

Colophonium. 1872: Melts at 135°.—1882: Melts on the water-bath.

Cortex Chinæ. 1872: (Calisaya) containing at least 2% of alkaloids.—1882: (Cultivated Barks) containing at least 3.5% of alkaloids.

Cortex Condurango. New, 1882: Bark of Gonolobus Condurango.

Elixir Amarum. 1872: Extr. Trifolii fibr. 2, Extr. Aurant. Cort. 2, Aqua Menth. pip 16, Spiritus dilut. 16, Spir. Æther. 1 —1882: Extr. Absinthii 20, Elæosacchar. Menthæ pip. 5, Tinct. Amara 5, Tinct. Arom. 5, Aqua 25.

Emplastrum Cantharidum Perpetuum. 1872 : Resin 50, Yellow Wax 50, Turpentine 37, Burgundy Pitch 25, Suet 20, Powd. Cantharides 18, Powd. Euphorbium 6.—

1882: Resin 70, Yellow Wax 50, Turpentine 35, Suet 20, Powd. Cantharides 20, Powd. Euphorbium 5.

Extracta Narcotica Sicca. 1872: From the Extract and Dextrin.—1882: From the Extract and Powd. Licorice Root.

Extracta Narcotica Soluta. New, 1882: Extract 10, Water 6, Glycerin 3, Alcohol 1 parts.

(*Other Extracts*, see our September number, p. 268.)

Ferrum Carbonicum Saccharatum. 1872: The ferrous carbonate dried with cane-sugar.—1882: Ferrous carbonate dried with ¼ of milk-sugar and ¾ of cane-sugar.

Ferrum Sulfuricum Purum. 1872: Crystals or crystalline powder.—1882: Crystalline flour obtained by pouring the aqueous solution into alcohol, and drying in sunlight.

Folia Hyoscyami. 1872.—Now: Herba Hyoscyami.

Folia Sennæ. 1872: Alexandria and Tripoli Senna.—1882: Alexandria and India (Tinnevelly) Senna.

Fructus Papaveris. 1872: With seeds.—1882: Without seeds.

Glycerinum. 1872: Sp. gr. 1.230–1.250.—1882: 1 225–1.235.

Gossypium Depuratum. New, 1882.

Infusum Sennæ Compositum. 1872: Senna 2, Rochelle Salt 2, Manna 3; Product 15 parts.—1882: Senna 5, Rochelle Salt 5, Manna 10; Product 40.

Iodum.—1882: 0.2 *gm.*, mixed with 0.5 *gm.* of iodide of potassium and water, and a little gelatinized starch, should require 15.5–15.7 *cc.* of the vol. sol. of hyposulphite of sodium.

Kali Carbonicum Crudum. 1872: At least 65% pure carbonate; not more than 18% water.—1832: at least 90% pure carbonate.

Kali Carbonicum Purum. 1882: At least 95% pure carbonate.

Lignum Quassiæ. 1872: Only the Surinam wood.—1882: Surinam and Jamaica Quassia.

Linimentum Ammoniatum. 1872: Ol. Olivar. 4, Liq. Ammon. caust. 1.—1882: Ol. Olivar. 3, Ol. Papaver. 1, Liq. Ammon. caust. 1.

Linimentum Ammoniato-Camphoratum. 1872: Ol. Camphorat. 4, Liq. Ammon. caust. 1.—1882: Ol. Camphorat. 3, Ol. Papaver. 1, Liq. Ammon. caust. 1.

Linimentum Saponato-Camphoratum Liquidum. 1872: Prepared by dissolving Soap and Camphor, etc., in Alcohol.—1882: Mixture of Spir. Camphor 120, Spirit. Saponatus 350, Liq. Ammon. caust. 24, and the oils.

Linimentum Terebinthinatum. New, 1882: Kali Carbon. Crud. 6, Sapo kalinus 54, Ol. Terebinth. 40.

Liquor Aluminii Acetici. New, 1832: Sp. gr. 1.044–1.046. (See NEW REM., September, p. 271).

Liquor Ammonii Acetici. 1872: Sp. gr. 1.028–1.032.—1882: 1.032–1.034.

Liquor Ammonii Caustici. 1882: 4 *gm.* should saturate 23.5 *cc.* of vol. hydrochloric acid.

Liquor Corrosivus (Villat's). New, 1882: Cuprum sulfur. 6, zinc. sulfur. 6, Acetum 76, Liq. Plumbi Subacet. 12.

Liquor Ferri Acetici. 1872: 8% Fe., sp. gr. 1.134–1.138.—1882: 5% Fe., sp. gr. 1.081–1.083.

Liquor Ferri Oxychlorati (Ferrum Dialysatum). (See NEW REM., October, p. 293).

Liquor Ferri Sesquichlorati. 1872: 15% Fe, sp. gr. 1.480–1.484.—1882: 10% Fe., sp. gr. 1.280–1.282.

Liquor Ferri Sulfurici Oxydati. 1872: 10% Fe., Sp. gr. 1.317–1.319.—1882: 10% Fe., sp. gr. 1.428–1.430.

Liquor Kali Arsenicosi. 1872: Acid. Arsen. 1 in 90 of Liquor.—1882: Acid. Arsen. 1 in 100 of Liquor.

Liquor Kali Caustici. 1872: 33.3% KHO; sp. gr. 1.330–1.334.—1882: 15% KHO; sp. gr 1.142–1.146.

Liquor Natri Caustici. 1872: 30–31% NaHO; sp. gr. 1.330–1 334.—1882: 15% NaHO; sp. gr. 1.159–1.163.

Liquor Natrii Silicici. New, 1882: Sp. gr. 1.30–1.40.

Moschus. 1882: To be dried over sulphuric acid until it ceases to lose weight. Not to contain over 8 per cent of ash.

Oleum Cantharidatum. New, 1882: 3 parts of Powd. Cantharides to be digested, in a steam-bath, with 10 parts of Rape Oil.

Oleum Jecoris Aselli. 1882: Should not separate any stearin at 0° C.

Pulvis Ipecacuanhæ Opiatus. 1872: Opium 1, Ipecac 1, Sulphate Potassium 8.—1882: Opium 1, Ipecac 1, Sugar of Milk, 8.

Rhizoma Calami. 1872: peeled.—1882: unpeeled.

Sapo Medicatus. 1872: Prep. from Ol. Olivæ Provenc.—1882: Prep. from equal parts of Olive Oil and Lard.

Secale Cornutum. Powdered Ergot is to be deprived of oil, by ether, before being employed.

Spiritus Saponatus. 1872; Sapo Oleaceus 1, Spiritus 3, Aqua Rosæ 2; by digestion.—1882: By saponifying Olive Oil 60, with Liq. Kali Caust. 70, Alcohol 75, then diluting with Alcohol and Water.

Spiritus Vini Cognac. New, 1882: Sp. gr. 0.920–0.924. 46–50%, by weight, of abs. alcohol.

Styrax Liquidus. 1882: To be purified by solution in ½ part of benzol and evaporation of the filtrate.

Syrupus Althææ. 1882: The water used for extracting ing the root contains 2% alcohol.

Syrupus Ferri Oxydati Solubilis. 1882: Mixture of equal parts of Ferrum Oxydatum Saccharatum, Aqua Destillata and Syrupus Simplex.

Tincturæ. 1872: Prepared partly by maceration, partly by digestion.—1882: Prepared only by maceration at about 15° C.

Tinctura Ferri Acetici Ætherea. 1872: Liq. Ferri Acet. 9, Spiritus 2, Æther Acet. 1. Contains 6% Fe.—1882: Liq. Ferri Acet. 80, Spiritus 12, Æther Acet. 8. Contains 4% Fe.

Tinctura Iodi. 1882: Sp. gr. 0.895–0.898.

Tinctura Opii Crocata. 1872: Prep. with sherry; sp. gr. 1.018–1.022.—1882: Prep. with equal parts of Alcohol and Water; sp. gr. 0.980–0.984.

Tinctura Opii Simplex. 1872: Opium 4, Spir. dilut. 19, Water 19. Sp. gr. 0.978–0.982.—1882: Opium 10, Spir. dil. 50, Water 50; sp. gr. 0.974–0.978.

Unguentum Cerussæ. 1872: Cerussa 1, Adeps Snillus 2.—1882: Cerussa 3, Axungia mineralis 7.

Unguentum Diachylon Hebra. 1872: Equal parts of Lead plaster and Linseed Oil.—1882: Equal parts of Lead Plaster and Olive Oil.

Unguentum Glycerini. 1872: Glycerin 10, Starch 2, Water 1 (on steam-bath).—1882: Glycerin 50, Tragacanth 1, Alcohol 5 (on steam-bath).

Unguentum Hydrargyri Cinereum. 1872: Mercury is extinguished with old mercurial ointment.—1882: Mercury is extinguished by being gradually added to the mixture of tallow and lard.

Unguentum Hydrargyri Album. 1872: With $\frac{9}{16}$ parts Lard.—1882: With Axungia mineralis instead of lard.

Unguentum Hydrargyri Rubrum. Same as preceding.

Unguentum Kalii Jodati, 1872: Iodide of potass. 20, hyposulphite of sodium 1, Water 15, Lard 165.—1882: Iodide of potassium 20, Water 10, Vaselin 170.

Unguentum Plumbi Tannici. 1872: By precipitating a decoction of oak-bark with solution of subacetate of lead.—1882: Tannic acid 1, solution of subacetate of lead 2, Lard 17.

Unguentum Tartari Stibiati. 1872: With ½ of Lard.—1882: With Vaselin instead of Lard.

Unguentum Zinci. 1872: With $\frac{9}{16}$ of Unguentum Rosatum.—1882: With Vaselin.

Vinum Chinæ. 1872: Prepared by extracting Calisaya with Red wine.—1882: Tincture of Cinchona, 1, Glycerin 1, Sherry 3.

The above synopsis is based chiefly upon that contained in OTTO SCHLICKUM'S *Apotheker-Kalender für das Deutsche Reich*, f. 1883 (16mo, Leipzig. 80 cents), which we would recommend to our German readers as a very useful and handy little volume.

ON THE TREATMENT OF CANCER. By JOHN CLAY, Professor of Midwifery in Queen's College, etc. London, 1882: J. & A. Churchill. Pp. 32. 8vo. 1 sh.

THIS is a reprint of Mr. Clay's articles in *The Lancet* on the use of Chian turpentine in the treatment of cancer. It

contains also an introductory chapter relating mainly to the physical characteristics of the drug, and the approved methods for its preparation and administration. Those who desire to follow Mr. Clay's method of using Chian turpentine will find this pamphlet very serviceable.

EIGHTEENTH ANNUAL REPORT OF THE ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY for the Year 1881–2. With the Exercises of the Sixty-first Annual Commencement of the Philadelphia College of Pharmacy. Pp. 141. 8vo.

IN addition to the usual reports of meetings, committees, etc., this number contains several very interesting lectures and papers.

PRICE-LIST of Chemical and Pharmaceutical Preparations, Comprising Fluid and Solid Extracts, Elixirs, Wines, Syrups, Plasters, Ointments, etc., Miscellaneous Pharmaceutical Products. Manufactured by Richardson & Co., St. Louis, Mo.

A VERY complete and handy pamphlet containing titles and prices of most of the articles required by a retail pharmacist.

PROCEEDINGS OF THE CONVENTION OF DRUGGISTS, ALSO OF THE MASSACHUSETTS PHARMACEUTICAL ASSOCIATION, etc., 1882. Pp. 80. 8vo.

Neubauer (Dr. C.) und **Vogel** (Dr. Jul.). Anleitung zur qualitativen und quantitativen Analyse des Harns, sowie zur Beurtheilung der Veränderungen dieses Secrets.—*Achte* Auflage. Erste Abteilung: Analytischer Theil; bearbeitet von Dr. Huppert in Prag. 8vo. Wiesbaden, 1882.

[The attention of our readers is called to this new edition of Neubauer's and Vogel's well-known work.]

Neubauer (Dr. Carl). Systematischer Gang der qualitativen und quantitativen Analyse des Harns. *Achte* Auflage; bearbeitet von Borgmann. 8vo. Wiesbaden, 1882.

Chemiker Zeitung.—This valuable periodical, conducted by Dr. G. Krause, of Coethen, Germany, will appear hereafter in an enlarged form, without increase of price.

Andouard (A.). Nouveaux Eléments de Pharmacie. 2ème éd. 8vo. Paris. Vol. I. out. Price for both vols. 16 *fr.*

Baenitz (Dr. C.). Handbuch der Botanik. (With more than 1,700 woodcuts.) 8vo. Berlin. 4*m.*

This work contains the best botanical woodcuts ever published in a book intended for schools.

Bersch (Jos.). Gährungs-Chemie für Praktiker. (2d to 4th part, also under the title:) Die Spiritusfabrikation und Presshefebereitung. (With 127 woodcuts.) 8vo. Berlin, 1882. (Together pp. xxxvi., 1,372.) 32*m.*

(*On the Manufacture of Alcohol and of Compressed Yeast.*)

Carrick (G. L.). Koumiss or Fermented Mare's Milk and its Uses . . . in Consumption, etc. With an Appendix on the Best Methods of Fermenting Cow's Milk. 8vo, pp. 302. London. 10*sh.*

Durand (Louis). Etude sur le Zingiber officinale, et sur les rhizomes de gingembre employés en médecine. 4to, 57 pp. Mayence et Paris.

Encyclopédie Chimique, publié sous la direction de N. Frémy. Vol. I. (Introduction). 8vo, 2,000 pp., with illustr. and atlas of 48 tables. Paris, 1882. Price per two vols. $12.50

Gerrish (F. H., M.D.). Prescription Writing: Designed for the Use of Medical Students Who have Never Studied Latin. 4th ed. (With Appendix on Metric System of Prescriptions.) 24mo, pp. 55. 3*sh.*

Gimeno y Cabanas (A.). Tratado elemental de therapéutica, materia médica y arte de recetar, hecho con arreglo á las obras modernas de Ribes, Bouchardat, etc. 8vo. Madrid. Appears in parts. Price complete, $6.00.

Glannetti. Gli alcaloidi cadaverici o ptomaini e la loro importanza nella tossicologia. (From: Università regia degli studj di Sassari. Discorso inaugurale.) Sassari (tip. Dessì), 4to, pp. 79.

Gorup-Besanez' Lehrbuch d. Chemie für d. Unterricht auf Universitäten, etc. (In 3 vols.) 2d vol. (also under the title:) Lehrbuch d. Organischen Chemie. 6te Aufl. neu bearb. v. Herm. Ost. 8vo. Braunschweig. 12*m.*

Hartig (Dr. Robert). Lehrbuch der Baumkrankheiten. 8vo (illustr.). Berlin. 12*m.*

Ince (Jos.). The Latin Grammar of Pharmacy for the Use of Medical and Pharmaceutical Students. With an Essay on the Rendering of Latin Prescriptions. 8vo, pp. 146. London. 4*sh.*

Kny (L.). Botanische Wandtafeln mit erläuterndem Text. Parts I.–V. (V. just out). Each part contains 10 plates, 69 *cm.* by 85 *cm.*, with text.

Parts I. and II., each 24*m.*; Parts III. to V., each 30*m.*

Krause (G.). Internationale Tabelle der chemischen Elemente (in German, French, and English). 3te Aufl. Köthen. [*Very useful.*] $0.40.

Landolt (H.). Handbook of the Polariscope and its Practical Application. Adapted from the German Edition by D. C. Robb and V. H. Veley. With Appendix by I. Stiner. 8vo. London. 10*sh.* 6*d.*

Noerdlinger (H. von). Querschnitte von 100 Holzarten. Vol. X. (each previous volume contains 100 cross-sections; at same price). 12mo. Stuttgart, 1882. 14*m.*

Periam (J.). The American Encyclopædia of Agriculture. (With over 400 engravings.) 8vo, pp. 1,085. Chicago.

Phillips (C. D. F.). Materia Medica and Therapeutics: Inorganic Substances. 8vo, pp. 806. London. 21*sh.*

Rabenhorst's Kryptogamen-Flora Deutschlands, Oesterreichs u. d. Schweiz. 2te Aufl. In numbers, each at 2.40*m.* Vol. I.: Fungi, will appear in about 18 numbers; Nos. I. to V. are out.

Rammelsberg (C. F.). Handbuch der krystallographisch-physikalischen Chemie. 2 vols. 8vo. Leipzig. $11.00.

Reynold (J. Emerson). Experimental Chemistry for Junior Students. Part II.: New Metals. With an Appendix on Systematic Testing for Acids. Pp. 276. 18mo. London. 2*sh.* 6*d.*

Roscoe (H. E.) and **Schorlemmer** (C.). Ausführliches Lehrbuch der Chemie, Vol. III. Die Kohlenwasserstoffe and ihre Derivate, oder Organische Chemie. (Illustr.) Part I. 8vo. Braunschweig, 1882. 12*m.*

Semple (C. E. Armand). Tables of Materia Medica and Therapeutics (Vegetable and Animal Substances) for Students Preparing for Examination. 12mo. London, 1882. 1*sh.*

Unna (P. G.). Kurze Anweisung zum Gebrauch der Salben- und Pflastermulle. 8vo, pp. 10. Kassel. $0.25.

Wenghoeffer (Dr. Ludwig). Kurzes Lehrbuch der Chemie der Kohlenstoffverbindungen unter besonderer Berücksichtigung der neuesten Forschungen. 8vo, pp. 764. Stuttgart. $4.40.

Whitla (W.). Elements of Pharmacy, Materia Medica, and Therapeutics. With lithographs and woodcuts. 12mo, pp. 520. London. 10*sh.* 6*d.*

Wynter-Blyth (A). Manual of Practical Chemistry. (About to be issued in two volumes under the separate titles:) I., Foods: their Composition and Analysis. II., Poisons: their Effects and Detection. 8vo, Vol. I., pp. 586. 16*sh.*

Our exchanges note the recent decease of Prof. Decaisne of Paris, a pupil of Jussieu, at the age of 76 years, and of H. Pidoux, co-laborator with Prof. A. Trousseau in their well-known Treatise on Therapeutics. The latter died on the 14th of September.

ITEMS.

American Pharmaceutical Association.—Members who attended the meeting at Niagara Falls, and failed to place their names on the register of the Association, are requested to inform the Secretary by postal card, directed to 143 N. Tenth street, Philadelphia. By order of

C. A. HEINITSH, *President.*

The interest from the Centennial Fund is now available for scientific investigations, and the committee is prepared to receive applications for grants from members accompanied by a statement of the investigation to be made, and of the amount of material required, it being understood that the results of the investigation, together with a full report thereon, be communicated to the annual meeting of the Association (see By-laws of the Council, chapter vii., article 1).

Applications should be sent to either one of the undersigned before January 1st, 1883.

CHARLES A. HEINITSH, Lancaster, Pa.
SAM'L A. D. SHEPPARD, Boston, Mass.
JOHN M. MAISCH, Philadelphia, Pa.

British Pharmaceutical Conference.—The annual meeting of the British Pharmaceutical Conference took place at Southampton on August 22d to 23d. Professor Attfield, F.R.S., occupied the chair as President.

The most important and interesting feature of the meeting was the President's Address, which contains many passages applicable to the condition of affairs in this country, and, therefore, of interest to our reader.

During the meeting a considerable number of valuable papers were read. Of those which are of practical interest we have procured reports or abstracts and present the same to our readers.

The selection of the place of meeting for 1883 was left to the Executive Committee.

The following officers were elected for the ensuing year:

President: Prof. John Attfield, Ph.D., F.R.S., F.I.C., F.C.S.

Vice-Presidents: M. Carteighe, F.I.C., F.C.S., London; J. R. Young, Edinburgh; C. Umney, F.I.C., F.C.S.

Treasurer: C. Ekin, F.C.S., Hounslow.

General Secretaries: F. Baden Benger, F.C.S., Manchester; S. Plowman, F.I.C., London.

Other Members of the Executive Committee: Alexander Kinninmont, F.C.S., Glasgow; J. C. C. Payne, Belfast; W. A. H. Naylor, F.C.S., London; R. Chipperfield, Southampton; P. W. Squire, F.L.S., F.C.S., London; G. S. Taylor, F.C.S., London; J. C. Thresh, D.Sc., F.C.S; F. W. Fletcher, F.C.S., London.

Auditor: James Spearing, Southampton.

Albany College of Pharmacy.—The second course of this college commenced on Monday, October 2d, with addresses by Professor Willis G. Tucker, Dr. A. B. Husted, and the Rev. Dr. Dean.

St. Louis College of Pharmacy.—The seventeenth annual lecture course of this college opened Monday evening, October 9th, 1882. A large concourse of visitors were present. The course began with an attendance of ninety students. Prof. J. M. Good delivered the opening address, giving a short synopsis of the plan of teaching and calling attention to the necessity of attending the course of the Chemical and Pharmaceutical Laboratory. Prof. Chas. O. Curtman delivered an interesting lecture upon "Pneumatics."

Allaire, Woodward & Co's. Prize.—The committee, consisting of Wm. Saunders, J. U. Lloyd, and E. B. Stuart, to whom were referred the essays offered in competition for Allaire, Woodward & Co's. prize (see NEW REM., 1881, p. 162) have reported in favor of the following. The first prize (a Beck microscope, worth $100) to Mr. Geo. W. Hayes, of Philadelphia, for an essay on "Powdered Rhubarb." Mr. Theo. H. Wurmb, of St. Louis, received a microscope, worth $60, as the second prize, for his paper on "Powdered Ipecac." Mr. Virgil Coblentz, of Springfield, O., received the third prize—a microscope valued at $40, for a paper on "Powdered Jalap."

The papers of Mr. Geo. D. Hayes, of New York City, and Mr. V. E. Phillips, of Olmy, Ill., on "Powdered Opium" and "Powdered Extract of Licorice" were declared to be worthy of honorable mention. The committee states that the degree of excellence of all the papers submitted was such that a choice of the best was very difficult.

Norwegian Cod-Liver Oil.—Consul Gade, of Bergen, Norway, writes to the Department of State that against last year's yield of 11,500,000 fish, the net result of this year is estimated at only 5,300,000 fish and 9,300 barrels of liver, producing, in all, 4,100 barrels of oil, of which a little more than 2,000 barrels will be exported as steam-refined, first quality.

Friedrich Woehler, the Nestor of chemistry, died at Goettingen, on September 23d, after a brief illness (of four days), aged 83 years. He was born on July 31st, 1800, at Eschersheim near Frankfurt-on-the-Main; in 1819, entered at the University of Marburg to study medicine and chemistry, and afterwards devoted himself to the study of the latter exclusively, first under Gmelin at Heidelberg, and afterwards under Berzelius at Stockholm whose assistant he remained until 1824. In 1825, he received an appointment as teacher of chemistry at the newly-established technical school in Berlin, was made professor in 1827, and, in 1831, removed to Cassel, where he founded a technical school himself. In 1836, he was appointed Professor of Medicine and Director of the Chemical Institute at the University of Goettingen, and also General Inspector of the Pharmacies of Hanover. His investigations comprise all departments of chemistry, and some of them have been of the utmost importance, opening the way for the development of new branches. Already in 1827 and 1828, he had discovered Aluminium, Beryllium, and Yttrium; during the same period he was occupied with the study of cyanic acid, and discovered not only new cyanogen compounds, but also the artificial production of urea from cyanate of ammonium, which discovery broke down the barrier between organic and inorganic chemistry. His investigations and publications, in conjunction with *Liebig*, on the benzol-compounds mark the beginning of the rational treatment of organic chemistry, and contributed, in no small degree, to the development of the theory of compound radicals and of substitution. In conjunction with Liebig, he also discovered the numerous deriatives of uric acid, the constitution of mellitic acid, the decomposition of amygdalin with separation of sugar the preparation of chrome-red, etc. Among his other labors may be mentioned those involving the study of the compounds of Titanium, Tungsten, and Silicium, and the discovery of crystallized boron and silicium (with Saint-Claire Deville).

Prof. Woehler was not only full of well-deserved honors through his eminent services in the cause of science, but he was beloved, wherever he was personally known, by his genial and pleasing manner, and his attractive style of instruction. His loss is deeply deplored by his pupils, young and old, who are scattered, in thousands, over the face of the civilized parts of the globe.

The Poison of the Borgias, according to an old Italian manuscript, was the fatty principle of ergot of rye, obtained by maceration in putrefied (ammoniacal) human urine.

Homœopathic Practice and Pharmacy in England—Mr. Ross, of the firm of Leath & Ross, wholesale homœopathic chemists of England, give some statistics relating to the increase of homœopathy in London, based

upon nearly thirty years' experience of that firm At the commencement of that period, the resident homœopathic practitioners in London might almost be counted on the fingers, while there were but two or three chemists who manufactured and sold homœopathic medicines. Now there are more than one hundred practitioners and some thirty chemists in London alone; many of the former with large and increasing practices, some of the latter with extensive and steadily increasing businesses. When Messrs. Leath & Ross first sent out a traveller some fifteen years ago, his reception by the allopathic (*sic*) chemists was anything but courteous, and it was no uncommon thing for him to be threatened with a pedal application if he ventured within the sacred precincts of their pharmacies again with his obnoxious and senseless wares; now there is hardly a respectable chemist within the three Kingdoms who does not keep and sell homœopathic medicines. Twenty years ago they hardly sold a hundred-weight of pilules in a year, now their output of this form of medicine alone is upward of one ton annually; twenty years ago, their consumption of spirit in the preparation of medicines scarcely amounted to five gallons a month, now they require 500 gallons per annum. Twenty years ago 100 gross of bottles could have sufficed to meet the requirements for twelve months, last year 2,163 gross were barely sufficient.

The Illinois Pharmaceutical Association met in Chicago on the 10th, 11th, and 12th of October, 176 members being registered, 122 new members and 18 honorary members were admitted. Addresses were delivered by President Bourscheidt, City Engineer D. C. Creiger, and Lieutenant-Governor Hamilton.

The Committee on Trade Interests made a lengthy report upon rebate sales, drug adulterations, itinerant venders of nostrums, counter prescribing, trade-mark preparations, the use of secret formulas by physicians, and "corners" in drugs.

The Committee on Legislation reviewed the changes regarding pharmacy laws which have been made in several States, and pointed out some improvements which are desirable in the enforcement of the laws of Illinois.

The Committee on the Exhibition called attention to the desirability of excluding proprietary remedies.

The following officers and committees were elected: *President*, H. Biroth, Chicago; *Vice-Presidents*, H. Le Caron, Braidwood; E. Smallhausen, Lawrenceville; J. B. Boyd, Quincy; *Permanent Secretary*, T. H. Patterson, Chicago; *Treasurer*, W. P. Boyd, Arcola; *Executive Committee*, Thomas Whitfield, Chicago; L. Van Patten, St. Charles; Victor H. Dumbeck, Peoria; *Candidates for Board of Pharmacy*, J. E. Espey, Bloomington; William Bower, Olney; H. Smith, Decatur; H. Schroeder, Quincy; W. W. Marmon; H. Biroth, Chicago; Andrew C. Noxon, Hennepin; J. L. Franz, Danville.

The next meeting will be held at Springfield, on the second Tuesday of October, 1883, and Mr. F. Fleury was chosen as local secretary.

But few papers were read, the principal ones being on "the Preparations of Ergot," by C. S. Hallberg, of Chicago; and "Citrine Ointment," by Adolph G. Vogeler. The following list of queries was proposed; the answers to be presented next year.

1. The lard of commerce is deprived to a great extent of its *olein;* will it thus serve as well for the basis of ointments and cerates? 2. Do the light voluminous sulphates of quinia and cinchonidia as now in the market possess the same commercial value as the dense preparations? 3. The purity of the different carbolic acids of the market is questioned. To what extent do they differ? 4. Most sugar contains glucose in varying quantities. What effect will this have on its pharmaceutical uses, and what percentage is admissible? 5. Is there any difference between the various crude petroleum masses as now offered to the trade? 6. Are pepsin and bismuth incompatible in solution, and under what condition? 7 What causes the occasional gelatinizing of the solution of citrate of magnesia prepared according to the United States Pharmacopœia? 8. New preparations under the name of dialysates are in the market. Do they possess the merits claimed for them? 9. It is claimed that glycerin is largely adulterated with glucose. To what extent is this true? 10. A concentrated solution of chloral hydrate and potassium bromide possesses solvent properties different from solutions of either of these salts. What are the causes? 11 Is it necessary that solution of chloride iron U. S. P. should contain more free muriatic acid than that prepared from other pharmacopœias? 12. Is it desirable to have a formula for compound syrup of stillingia in the pharmacopœia, as it is so often prescribed all through the country? 13. The so-called sugar-coated pills of commerce are largely coated with French chalk or kaoline. To what extent is this practised, and does such coating modify the solubility of the pills? 14. Wanted—A correct method, easy of application, for determining the strength of pepsin. 15. Compare the quality of the various kinds of pepsin found in the United States. Give the manufacturer's name; mention the process. 16. To what extent can petroleum ointment be used as basis for the officinal ointments and cerates?

Excursions were made by the members and ladies to South Park, Lincoln Park, Pullman, and a dinner was served at the Grand Pacific Hotel, at which four hundred and seventy-five were seated.

The exhibition held during the session was of unusual size, over fifty firms and individual dealers being represented.

The Druggist, of Chicago, manifested its usual enterprise in publishing a daily edition, giving a full account of the proceedings, exhibition notes, advertisements of the exhibitors, etc.

Correction.

MR JOS. L. LEMBERGER, of Lebanon, Pa., asks that the following corrections be made in his paper on "Oil of Thyme," as published on page 294 of our October number.

No. 4, .80 (eighty one-hundredths) instead of 80.
No. 5, .42 (forty-two one-hundredths) instead of 42.
No. 6, .42 " " " 42.
No. 8, .84 (eighty-four " " " 84.

PHARM. CALENDAR FOR NOVEMBER.

N. B.—The officers of Societies, Colleges of Pharmacy, Pharm. Associations, etc., will oblige us by forwarding schedules of their meetings, lists of officers, and any changes that may be desirable.

Date.	Society Meetings.
Thurs. 2d.	New York Coll. Pharm.—Trustees' Meet.
	Massachusetts Coll. Pharm.—Trustees' Meet.
	Louisville Coll. Pharm.—Pharm. Meet.
	Philadelphia Coll. Pharm.—Alumni Soc. M.
Frid. 3d.	Cleveland Parm. Asso.—Bimonthly M.
	American Chem. Soc.—Monthly Meeting.
Mon. 6th.	Erie Co. Pharm. Asso.—Meet. at Buffalo.
	National Coll. Pharm.—Meet.
Tues. 7th.	Philadelphia Coll. Pharm.—Trustees' M.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Wed. 8th.	Cincinnati Coll. Pharm.—Trust. Meet.
Thurs. 9th.	Newark Pharm. Asso.—Monthly Meet.
	Louisville Coll. Pharm.—Direct. Meet.
	Philadelphia Coll. Pharm.—Alumni Ph. M.
	Maryland Coll. Pharm.—Meet.
	New York German Apoth. Society.—Meet.
Tues. 14th.	Pittsburgh Coll. Pharm.—Trust. Meet.
	Chicago Coll. Pharm.—Trust. Meet.
	Massachusetts Coll. of Pharmacy.—Pharm. Meet.
	Kings Co. Pharmaceutical Soc.—Meets at Brooklyn.
	National. Coll. Pharm.—Meet.
Tues. 21st.	St. Louis Coll. Pharm.—Trust. & Alum. M.
	Philadelphia Coll. Pharm.—Pharm. M.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Thurs. 23d.	New York Coll. Pharm.—Pharm. Meet.
Tues. 28th.	Boston Druggists' Assoc.—Meet.
Thurs. 30th.	Kings Co. Board of Pharm.—M. in Brooklyn.